

Atari ST
Resource
page 11

Antic®

\$12.95
DISK
INCLUDED

The **ATARI**® Resource

DECEMBER 1986 VOLUME 5, NUMBER 8

Celebrate
Your Holidays
With Atari

FIFTH ANNUAL
QUALITY PRODUCTS
SHOPPERS GUIDE
FOR YOUR ATARI
ANTIC 1986

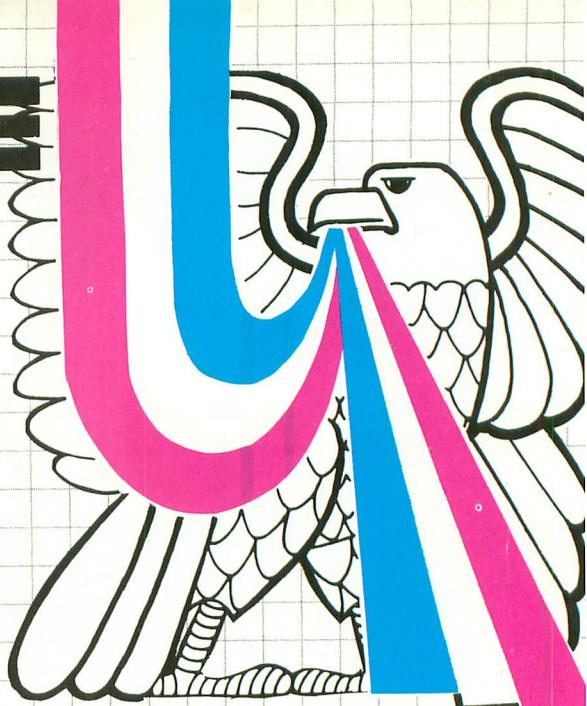
100
Best
8-Bit
Products



Inside: 8 Type-In Programs
(Including 2 ST Programs)

WHITEHOUSE COMPUTER

P.O. Box 4025 Williamsport, PA 17701



COMPUTERS

800XL	\$79
65XE	89
130XE	127
520ST (MONO)	CALL
520ST (RGB)	CALL
1040 ST	CALL

MONITORS

AMDEK	
300G	\$117
300A	127
310A	145
Color 600	395
Color 700	494
Color 710	568

ATARI	
SM124	\$169
SC1224	325

NEC	
1201	\$139
1205	89
1260	79

TAXAN	
220 Color/Green/14"	\$179

THOMSON	
CM365 RGB/Color/Green With Cables	\$269

TEKNIKA	
MJ-10	\$159
MJ-22	254

SAKATA	
SC-100	\$140

ZENITH	
ZVM 1220	\$95
ZVM 1230	95

BLUE CHIP	
Green	\$89.00
Amber	93.00
Color/RGB	279.00

PAPER

WHITE 20 LB LAZOR EDGE	
2500 Sheets	\$26
1000 Sheets	16
500 Sheets	11

ASSORTED PASTELS LAZOR EDGE	
2500 Sheets	\$44
1000 Sheets	26
500 Sheets	16
1000 Mailing Labels	9



ORDER TOLL FREE
1-800-351-3442

VISA 4%, MASTER CARD 4%, AMERICAN EXPRESS 5%

PRINTERS

CITIZEN

MSP-10	\$267
MSP-15	367
MSP-20	354
MSP-25	527
1200	194

STAR MICRONICS

NX-10	CALL
Gemini II	CALL
SG-15	\$366
SD-15	440
SR-10	469
SR-15	580
SB-10	588
SG-10C	230
Powertype	295

LEGEND

808	\$154
1080	205
1380	259
1385	295

OKIDATA

Okimate 10	\$171
Okimate 20	211
182	214
192	348
U-93	389

PANASONIC

1080	\$208
1091	231
1592	459
1595	CALL
3131	259
3151	408

SEIKOSHA

SP 1000	\$188 100CPS/NLQ
MP1300AI	525 300 CPS/NLQ

EPSON

Call for current pricing on all Epson models

PRINTER RIBBONS AND DUST COVERS AVAILABLE

DISK DRIVES

1050	\$127
Happy 1050	275
Happy Enhancer	129
Duplicator	129
Indus GT	194
SF314	215
SF354	99
Astra	CALL
US Doubler	49

CUSTOMER SERVICE AND PA RESIDENTS

MODEMS

CALL
1-717-322-7700

XMM 301	\$39
MPP 1000E	39
MPP 1200AT	159
MPP 1200ST	149
Team Modem	199
Avatek 1200	95
Avatek 1200HC 100% Hayes	143
Packard/Bell 1200	199
Compuserve	21
U-Call	36

INTERFACES

MPP 1150	\$45
U-Print/Port	40
U-Print 16K	69
U-Print 64K	85
PR Connection	63
PR Modem Cable	11
PR Printer Cable	11
Xetec	39
U-Print 1200XL	49
520 ST/IBM Cables 6 ft.	11
Micro Stuffer	69

DISKETTES

3 1/2 FUJI

SS/DD	\$17
DS/DD	24

5 1/4 FUJI

SS/DD	\$11
DS/DD	14

ELEPHANT

SS/DD	\$12
DS/DD	14

Disk Notchers

Disk Notchers	\$4
Allsop	CALL

Disk Banks

Allsop	CALL
Innovative Concepts	CALL

BATTERIES INCLUDED

Paperclip	\$36
Paperclip/Spell	CALL
Spell Pack	CALL
Home Pak	31

BRODERBUND

Karateka	\$18
Lode Runner	18
Print Shop	27
Graphic Libraries I, II, & III	15
Print Shop Companion	25

SYNAPSE

Synfile	\$30
Syncalc	30
Syncalc Templates	14

MICROPROSE

F-15 Strike Eagle	\$21
Silent Service	21
Kennedy Approach	21
Crusade In Europe	21
Conflict In Nam	24

OSS

Mac 65	\$48
Action	48
Basic XL	38
Basic XE	48
Tool Kits	18

SUBLOGIC

Flight Simulator II	\$31
Night Mission Pinball	21
Jet	CALL

XLENT

Mega font	\$19
Page Designer	21
Rubber Stamp	23
Typesetter	23

ICD

Rambo XL	\$36
US Doubler	49

ATARI

Visicalc	\$14
Atariwriter	21
Atariwriter +	32
Learning Phone	26

THE ATARI WORKFORCE

PAPERCLIP

"The #1 Best Selling Word Processing Package"

- BILLBOARD'S computer software chart

"... by far the best word processor ever available for the Atari" - ANTIC

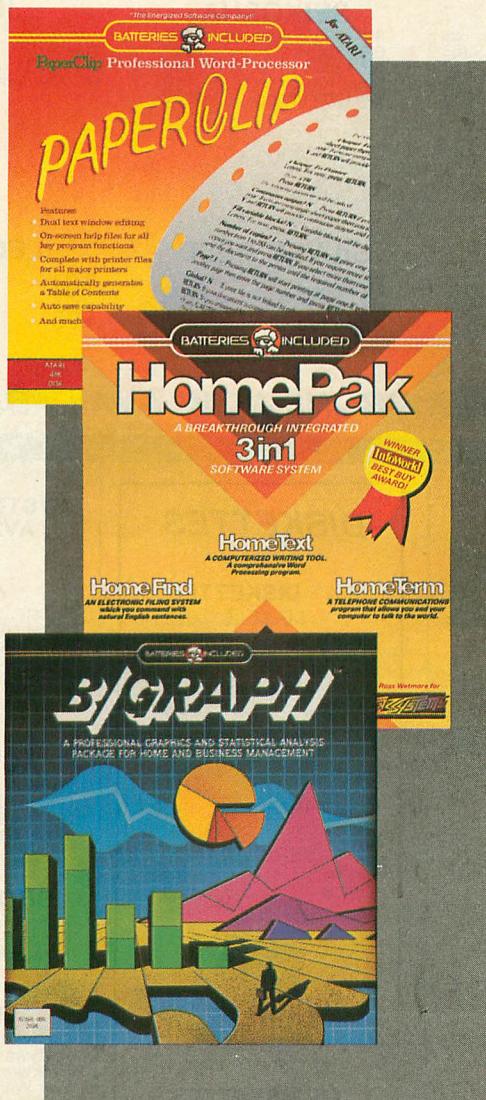
- Editing features include Block Move, Copy and Delete, Global Search and Replace
- Enter repetitive words, sentences, or paragraphs instantly with Macro Command
- Edit two files simultaneously and transfer text between documents using Dual Text Windows
- Automatic Page Numbering, Table of Contents, Headers and Footers
- Editing screen extends up to 130 columns wide and scrolls in any direction
- Print Preview displays formatted text exactly as it will be printed
- Automatically saves files as you write

NEW! SPELL PACK FOR THE 130XE WITH A 36,000 WORD DICTIONARY WITH ON SCREEN WORD SEARCH.

B/GRAPH

"Graph-generating and statistical analysis... we recommend B/Graph!" - INFOWORLD

- graph up to three factors with 100 data points each
- choose pie charts, line and area graphs, 2 and 3 dimensional bar charts and more
- convert instantly between graph types without re-entering data
- full screen editor, multiple grid and graph scaling, automatic labelling, overlays, "slide show" capability
- statistical analysis functions include standard deviation, variance, Chi-square, regressions, plotting and many more
- reads and writes to VisiCalc DIF - use VisiCalc files with B/Graph and vice-versa
- compatible with most popular printers, printer cards, interfaces



HOMEPAK

"... inexpensive, powerful, integrated software. As such, HomePak is the winner of Infoworld's Best Buy Award."

- INFOWORLD MAGAZINE

"...quite simply, the best... the highest rating possible." - ANALOG COMPUTING

Three easy-to-use programs on one disk:

1. HOMETERM TELECOMMUNICATIONS

- Puts you in touch with bulletin boards, public databases and on-line services
- Powerful user-defined Macro facility - log on to your favorite service or bulletin board with just one command
- Store up to 10 macros per document
- X-Modem protocol, the virtual on-line standard
- Download files of any virtually any length
- Flexible data handling - save incoming text to disk, edit it, print it

2. HOMETEXT WORD-PROCESSOR

- Over 20 full-screen editing and formatting features: move & copy, word-wrap, justification, automatic paging and many more
- What You See Is What You Get (WYSIWYG) - screen is an exact representation of the printed page
- Supports most major printer functions including boldface, underlining and extended characters

3. HOMEFIND DATABASE MANAGER

- Natural English-language data entry/retrieval system for simplified electronic filing
- Includes the key search/sort functions, flexible queries, easy output commands and sophisticated Report Composer

All three HomePak programs reside in memory together - it's easy to transfer data between them and perform integrated tasks.

AND FOR THE ATARI ST.



BATTERIES INCLUDED, an ITM company, 30 Mural Street, Richmond Hill, Ontario, Canada, L4B 1B5 (416)881-9941, Customer Information (416)881-9816. If you can't find this product at your local retailer, you may order it direct from us at the full suggested list price plus \$5.00 for postage and handling. For product orders please call 1-800-387-5707 (U.S. only). For most Batteries Included products you can always have the latest version of your program by returning the original disk and \$10.00. Write to us for our full color catalog of products for the APPLE, APPLE MACINTOSH, ATARI, ATARI ST, COMMODORE, COMMODORE AMIGA, and IBM SYSTEMS.

©1986 Batteries Included. APPLE, APPLE MACINTOSH, ATARI, ATARI ST, COMMODORE, COMMODORE AMIGA, and IBM are registered trademarks respectively of APPLE COMPUTERS INC., ATARI CORPORATION, COMMODORE BUSINESS MACHINES INC., and INTERNATIONAL BUSINESS MACHINES INC.

Some features may vary with computer system used.

*AS COMPILED FROM NATIONAL RETAIL SALES REPORTS FOR WEEK ENDING JANUARY 5, 1985



Lyco Computer Marketing & Consultants

1080....\$195

PANASONIC

1080	195
1091	225
3131	249
1092	309
1592	419
1595	595

EPSON

LX80	CALL
FX85	CALL
DX10	CALL
DX20	CALL
DX35	CALL
H80	CALL
HS80	CALL
FX286	CALL
LQ800	CALL
LQ1000	CALL

SAVE ON THESE IN STOCK PRINTERS

OKIDATA

Okimate	199
292	499
293	599
120 NLQ	205
182	214
192	348
93	CALL

SEIKOSHA

SP-1000 A centronics	165
BP-52001	649
BP-1300	469
Color Kit	119
SP-1000 ribbon	8.50

JUKI

Juki 6100	CALL
Juki 5510	CALL
Juki 6300	CALL
RS-232 serial board	.55

NX-10 Call

STAR MICRONICS	
LV 12-10 (New)	CALL
NL-10	CALL
NX-10	CALL
NB-15	CALL
SB-15	367
SG-15	319
SD-10	438
SD-15	469
SR-10	578
SR-15	589
SB-10	

LEGEND

808	148
1080	199
1380	229
1385	289

CITIZEN

120-D	179
MSP-10	285
MSP-15	385
MSP-20	325
MSP-25	485
Premier 35	469

COLOR RIBBONS NOW AVAILABLE!!

MONITORS

HITACHI

MM-1218 12" GR.	99
CM-1406 13" color w/cable	179

THOMPSON
365 12 RGB.....CALL

ZENITH

ZVM 1220	89
ZVM 1230	89

PANASONIC
TR-120 MDPA.....CALL

MODEMS

Supra 300	39.95
Supra 1200	149.95
ZM 301	39.95
Zoom 1200 st	189
U.S. Robotics 12000	189

DRIVES

Indus GT Atari	179
Atari 1050	129
SF 314	219
SF 354	159

INTERFACING

Microprint	39.95
XETEC AT	39.95
Atari 850	109
PR: Connection	CALL

ACTIVISION (520 st)

Music studio	34.75
Hacker	26.75
Little People	29.75
Paintworks	40.75
Hacker II	29.75

UNISON WORLD (520 st)

Printmaster	24.75
Art Gallery I or II	18.75

SUBLOGIC (520 st)

Flight Sim II	CALL
Set	CALL

FIREBIRD (520 st)

The Pawn	26.75
Star Glider	28.75

ACCESS (520 st)

Leader board	24.75
--------------	-------

EPYX (520 st)

Apshai Trilogy	24.75
Winter games	24.75

TIMEWORKS (520 st)

Word writer	CALL
Swift Calc	CALL
Data Manager	CALL

DISKETTES

5 1/4" DISKETTES MAXELL

SSDD	9.99
DSDD	12.99

BONUS

SSDD	6.99
DSDD	7.50

SKC

SSDD	8.50
DSDD	9.50
DSHD 96 TPI	19.50

VERBATIM

SSDD	9.99
DSDD	12.99



3.5 DISKETTES 3M

SSDD	16.99
DSDD	23.99

MAXELL

SSDD	16.99
DSDD	23.99

VERBATIM

SSDD	16.99
DSDD	24.99

SKC

SSDD	14.99
DSDD	19.99

SYSTEM PRICING AVAILABLE!

ATARI

520 st Monochrome	CALL
520 st color	CALL
SHD 204 20 Meg	CALL
1040 st	CALL
130 XE	CALL
65 XE	CALL

ACTIVISION

Hacker	15.75
Ghostbusters	15.75
Great AM Race	15.75
Music Studio	22.75

BRODERBUND

Print Shop	24.75
Graphics Lib I, II, III	15.75
Karateka	17.75

HI TECH

Cardware	8.95
Partyware	8.95
Heartware	8.95
War With All	12.95
Holiday Paper	8.95

O.S.S.

Basic XE	44.95
Basic XL	32.95
Action	44.95
Mac 65	44.95
Tool Kits	16.95

MICROPROSE

Silent Service	22.75
F-15	22.75
Conflict in NAM	24.75
Kennedy approach	22.75
Top Gunner 3 games	19.75

SUBLOGIC

Flight sim	29.95
Night Mission Pinball	18.95
Scenery disks	EA. 14.95

SSI

Wizards crown	24.75
Gettysburg	34.75
Gemstone healer	24.75
Phantasie	24.75

EPYX

Karate champ	20.75
Apshai Trilogy	24.75

ACCESS

Leader board	24.75
--------------	-------

JOYSTICKS FROM WICO & SUNCOM

Bat Handle	16.75
Boss	11.99
Super 3-way	19.99
TAC 3	9.95
Silk stik	6.95
Economy	5.95

DISK DRIVE CLEANING KIT \$8.95

NEW HOURS
Mon-Thur—9 AM-8 PM
Fri—9 AM-6 PM
Sat—10 AM-6 PM

TOLL FREE 1-800-233-8760

IN PA 717-494-1030

CUSTOMER SERVICE 717-494-1670

or send to

Lyco Computer
P.O. Box 5088
Jersey Shore, PA
17740

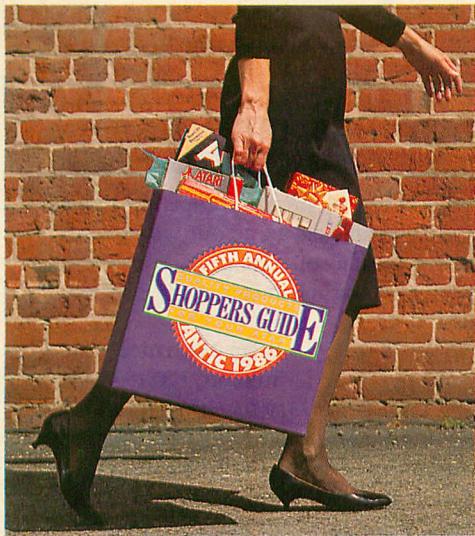


Risk Free Policy

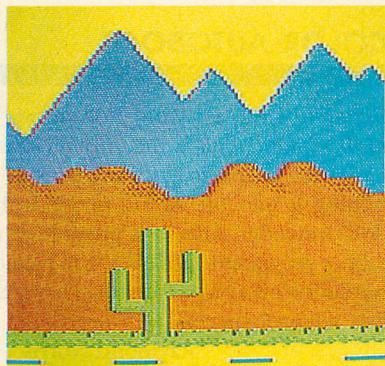
In-stock items shipped within 24 hrs of order. No deposit on C.O.D. orders. Free shipping on prepaid cash orders within the continental U.S. Volume discounts available. PA residents add sales tax. APO, FPO and international orders add \$5.00 plus 3% for priority mail. Advertised prices show 4% discount for cash, add 4% for Master Card and VISA. Personal checks require 4 weeks clearance before shipping. We cannot guarantee compatibility. We only ship factory fresh merchandise. Ask about UPS Blue and red label shipping. All merchandise carried under manufacturer's warranty. Return restriction applicable. Return authorization required. All items subject to change without notice.

AMERICA'S MAIL ORDER HEADQUARTERS

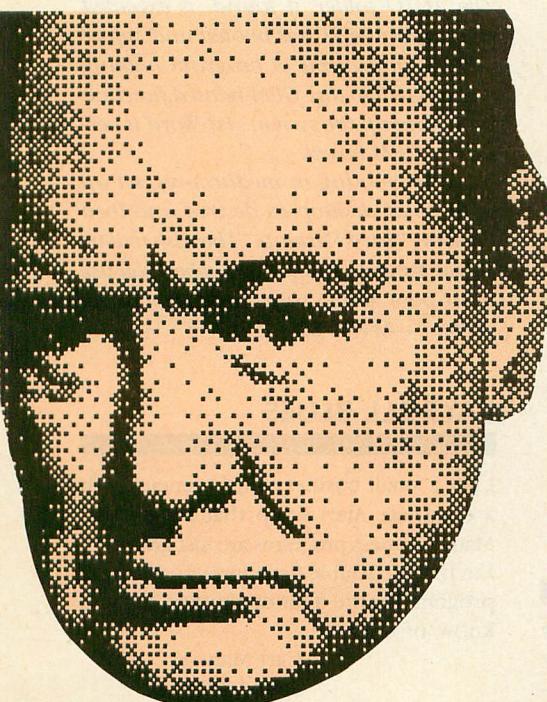
CIRCLE 038 ON READER SERVICE CARD



Fifth Annual Shoppers Guide 11



Landscape Illusion 67



Two New Atari Printers 50

Antic®

The **ATARI**® Resource

New Atari
Printers
Page 50

DECEMBER 1986, VOLUME 5, NUMBER 8

FEATURES

FIFTH ANNUAL SHOPPERS GUIDE by Gregg Pearlman 11
100 best products for 8-Bit Atari

RESPONSE SURFACE MAPPING by James Pierson-Perry 47
New views for 3-D graphics
TYPE-IN SOFTWARE

TWO NEW ATARI PRINTERS by Gregg Pearlman 50
Good deal at \$219.95

STEPPER MOTOR ROBOT-CONTROLLER by Scott Kilbourne 62
Moving real things with your Atari
TYPE-IN SOFTWARE

LANDSCAPE ILLUSION by Joe Brzuszek 67
Scrolling scenery fools the eye
TYPE-IN SOFTWARE

SOFTWARE LIBRARY

TYPE-IN LISTINGS SECTION 101

DEPARTMENTS

GAME OF THE MONTH
UNCLE HENRY'S NUCLEAR WASTE DUMP by James Hague 35
Be careful with those toxic cans
TYPE-IN SOFTWARE

STARTING OUT
NEW OWNERS COLUMN by David Plotkin 54
Lesson 9: Subscripted Variables
TYPE-IN SOFTWARE

EDUCATION
SPELLBLAST by Matthew Ratcliff 59
Space-action spelling practice
TYPE-IN SOFTWARE

ST RESOURCE
BUILD GEM DIALOG BOXES by Patrick Bass 72
Stepper motor for ST
TYPE-IN SOFTWARE

DEDUCTION! by Paul Pratt and Stephen Everman 89
Solve the mystery color patterns
TYPE-IN SOFTWARE

ST REVIEWS 95

ST PRODUCT NEWS 99



Publisher
James Capparell

Editorial

DeWitt Robbeloth, Executive Editor; Nat Friedland, Editor; Charles Jackson, Technical Editor; Patrick Bass, ST Program Editor; Gregg Pearlman, Junior Editor; Heidi Brumbaugh, Editorial Assistant; Bill Marquardt, Technical Assistant; Ron Luks, Online Editor.

Contributing Editors

Ian Chadwick, David Plotkin, David Small.

Art

Marni Tapscott, Art Director; Gregory Silva, Production Manager/Editorial Designer; Jim Warner, Design/Production Assistant; Katherine Murphy, Ad Production Coordinator; Julianne Ososke, Collateral Printing Coordinator; Mary Rhomberg Lavery, Contributing Artist.

Cover photography: Mark Gottlieb

Circulation

Margot Olmstead, Manager; Dixie Nicholas, Subscription Coordinator; Daniel Barrett, Ken Warner, Dealer Sales.

Administration

John Cady, Assistant Controller; Lorene Kaatz, Credit & Collections; Suzann Thompson, Accounts Receivable; Lydia Chee, Accounts Payable; Lawrence Sumpter, Retail Order Processing; Budiman Goutama, May Lai, Catalog Order Processing; Griselda Lopez, Cash Receipts; Susan Allison, Administrative Secretary; Dennis Swan, Receptionist.

Marketing

Jon Loveless, Vice President; Gary Yost, Director; Lisa Wehrer, Retail Sales Manager; Customer Service: Eric Gupton, Coordinator; Scot Tumlin, Technical Support; Michael Sandstrom, Customer Relations.

Advertising Sales

John Taggart, Director
(For Area Sales Representatives, see page 120.)

General Offices
& Catalog Customer Service
(415) 957-0886
Antic, 524 Second Street
San Francisco, CA 94107

Subscription Customer Service
(614) 383-3141
Antic, P.O. Box 1919, Marion, OH 43306

Credit Card Subscriptions & Catalog Orders
(800) 443-0100 ext. 133
(Continental U.S. & Hawaii)

December 1986, Volume 5, Number 8

Subscriptions: One year (12 issues) \$28. Canada and Mexico add \$8, other foreign add \$12. Action Edition (12 issues with disks) \$99.95, all foreign add \$25.

Editorial submissions should include text and program listings on disk and paper. Submissions will be returned if stamped, self-addressed mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher.

Antic is an independent periodical not affiliated in any way with Atari Corp. Atari is a trademark of Atari Corp. All references to Atari products are trademarked and should be so noted.

Antic is a registered trademark of Antic Publishing, Inc.
An Information Technology Company
Copyright ©1986 by Antic Publishing.
All Rights Reserved. Printed in USA.

I/O Board

CASE OF THE MISSING RAM

Why do I get only about 20K of available memory with my Atari Microsoft BASIC II cartridge whether I have 32K or 48K of RAM installed in my 800?

David Ferguson
Pontotoc, MS

The reason for this is that the 16K cartridge "overrides" any RAM that would otherwise use the same address space. If the RAM is not there to begin with, it isn't missed. Standard Atari BASIC gives only 8K of address space, so a 48K machine will give you only 8K more available memory than a 32K machine. If you own an XL or XE and press the [OPTION] key while booting up, you are telling the computer to use its RAM instead of the "built-in" BASIC.—ANTIC ED.

WRONG POKEs

In September's Tech Tips, the POKEs necessary for controlling the cassette motor were given in reverse order. POKE 54018,52 to turn it on and POKE 54018,60 to turn it off.

Richard Brewer
Princeton Junction,
New Jersey

WEFAX LED

When building the WEFAX Interface Board (**Antic**, September 1986) I recommend using a very low power consumption LED. Otherwise you may not "see the light." It is always good practice to use the lowest power consumption components available in any project.

Michael Angier
Seabrook, Texas

THANKS, CHARLIE

Many thanks to **Antic** Technical Editor Charlie Jackson for donating his survey compiler program, without which I probably would still be laboring over the figures from our club survey.

Paul Wheeler
MACE Membership Chairman
Detroit, MI

ODD CHARACTERS

When I list my program on paper, Atari's special characters come out wrong. Can you suggest a software package that can print any Atari character in my program list?

Brian LaChance
Wolcott, CT

*Try Lister Plus (\$19.95, **Antic Catalog**, AP0170). This program by Chet Walters, author of **Antic's Card Shuffler** (July, 1986) and **SSSnake!** (October, 1986) dumps any listed file to the printer using any character set you choose.*—ANTIC ED

COLOR AUTOBOOT

How can I run 1st Word from inside an AUTO folder? This is the only program I have been unable to autorun on my ST by putting it into the AUTO folder with a .PRG extender. Also, is it possible to autoboot programs (e.g. dBMAN) in medium resolution on a color monitor? I have tried this without success.

Raymond Norris
Waterloo, Ontario,
Canada

The AUTO folder, if found, is executed right after the ST has booted and before GEM is initialized. A program making a single call to any GEM-related function will hang up the system. 1st Word is certainly GEM-based.

As for booting in medium-res, set up your color desktop as desired and then click on "Save Desktop." The disk will be active for a short time, and when you use it to boot with, your desktop will reappear.—ANTIC ED

PAYROLL BLUES

I am a small business entrepreneur with a complete Atari setup that I use daily. Many business programs are just great, but I'm having trouble finding a good payroll program for the 8-bit computers. Do you know of one?

Carl Manson
Seaside, CA

See the Miles Payroll System from Miles Computing in this issue's Shoppers Guide. A review of this product is scheduled to appear in a forthcoming issue.—ANTIC ED

Rats

A GUIDE TO YOUR RAT SYSTEM

Finally, a mouse for your Atari 400, 800, XL or XE! It's like getting a new computer!

Sure your Atari has super resolution. But no mouse. The March issue of *Analogs* said that a mouse would make the 8-bit Atari "the toughest competitor on the 8-bit market" . . . that it would be great if these computers had a mouse. Now they do! Because we just developed the RAT. It's not merely a mouse, but an entire graphics system capable of generating high resolution drawings, graphs, charts and decorations.

And right now you save \$55 to \$85 over mice made for other 8-bit computers.

Already such software as *Super 3-D Plotter*®, *Master Disk Directory II*®, *Writer 80*®, *Rambrandt*® and *AtariArtist*® have RAT-compatible versions.

Other software companies are scrambling to make their products RAT-compatible. They love the RAT. They should, the thousands of Atari 400, 800, XL and XE owners represent a huge new customer base for their mouse-only programs. Look for the RAT-compatible seal on the package.



enhanced!

Look for this logo for official
RAT-enhanced software!

We also developed the RAT PACK Starter System to accompany the RAT.

It's a package of software that will let us do a variety of exciting graphics. Draw. Make diagrams. Use for creative sketching.

The time for bland reports has ended. Develop them with professional excitement . . . even technical drawings . . . with the RAT and the RAT PACK. Included in the PACK are: RAT TRACE, an icon-driven ACCU-DRAW program for high resolution drawings and graphics developed by Vision Software. It's part of the RAT PACK Starter System. Also included is RAT CONTROL, a simple program that lets you move the cursor by pushing the mouse—in any direction, at any time, quickly.

You also receive instructions on how to use the RAT in your own programs, without the use of any machine language or complicated routines.

Zobian Controls
P.O. Box 6406, Wyomissing, PA 19610

Yes!

Send me the RAT, complete documentation, and the RAT TRACE, the RAT CONTROL and the rest of the RAT PACK.

I enclose check or money order of \$69.95, plus \$2.00 shipping.
Or send C.O.D. (\$3.00 extra.)
PA residents add 6% sales tax.

Name _____

Address _____

Zip _____

**NEW
PRICE
\$69.95**

**Get a virtual
new computer!
Send for RAT
and RAT PACK Today!**

Does "mouseless" mean "lifeless"?
Wake up your Atari into a virtual new computer. Do graphs, diagrams, send sketches—with professional high resolution and excitement.

Send check or money order! Only \$114.95
Or call for C.O.D.!
215/374-5478 • 10:00 a.m. to 3:00 p.m.

I/O Board

ANY 1020 PENS?

After I bought my Atari 1020 color plotter, I used it often. Now I can't use it at all because the pens have run out of ink. Where can I find another set of pens?

Russ Novotny
Orland Park, IL

At this writing, Atari Corp. is out of 1020 plotter pens, but plans to restock. Meantime, they suggest trying local dealers. If that doesn't work, maybe by the time you read this, the pens will be again be available from Atari Customer Service, 1196 Borregas Avenue, Sunnyvale, CA 94086. (408) 745-2000.—ANTIC ED

PRL LICENSES

This was Prospero Software's answer to my query about a distribution license for compiled Pro Fortran-77 programs using the company's PRL program:

"The position with run-time licenses is that it free—you may distribute the PRL with your software when you sell it."

This is the icing on the cake. There isn't a better deal around. Prospero has done the ST world a great service.

Jay Thaddeus
Houston, TX

FAIR SHAKE

Steve Roquemore's review of Micromod 2.4 (**Antic**, July 1986) was fair and greatly beneficial. I thank the Editorial Department for adding the updated information at the end of the review. This has saved much confusion on the part of those we've talked to.

Steve Bolduc
MicroMiser Software,
Orlando, FL

Antic welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.

*Send letters to: Antic I/O Board,
524 Second Street, San Francisco,
CA 94107.*

800 SPACEBAR

The spacebar on my Atari 800 has gone bad, and apparently only another keyboard will remedy it. The repair people can't find one, however, which means that all the hardware and software I've bought is useless.

I'm a teacher who uses a word processor during the school year, but I've been without the computer for several months because of this "parts" problem. Please tell me where I can find a keyboard or another 800, either new or to use for parts.

Laurie Pate
Monticello, GA

*We can see that you have a strong attachment to your immobilized Atari 800, but consider that the current 65XE model can be bought for under \$100—probably not much more than your keyboard repair would cost. Virtually all your existing software should run on the 65XE with no problems, and any isolated compatibility problems can be solved with the public domain program FIX XL (\$10.95, **Antic Catalog**, PD0026.) If any readers have other ideas, please let us know.—ANTIC ED*

MINER SETBACK

Atari game fans, Help! When playing Zone 10 of **Miner 2049er** by Big Five Software, I can't complete Quadrant 5. There are two areas in the lower corners that my miner can't reach. Is there a mathematical flaw in the screen layout making it impossible for the miner to jump or fall to these areas? I've killed more miners than any cave-in trying to find out. I would ask Big Five Software, but they don't seem to have a phone number anymore.

Curt Sayler
Bismarck, ND

MPP HANGUPS

Neither the MPP (Supra) 1000-C and 1000-E modems hang up the phone if they answered it. The modem only hangs up if it originated the call. MPP owners can get modification instructions from Supra Corp, 1133, Commercial Way, Albany, OR 97321.

Keith Ledbetter
CompuServe ID
76703,4061

UPWARD COMPATIBILITY

As my wife enters law school, I'd like to add an second inexpensive Atari to the household as a word processor. Will my older 800 software run on an 800XL as is? Will newer 8-bit software run on my older 8-bit? I sure don't want to build another software library from scratch.

Gerry Leone
Minneapolis, MN

*Most Atari 8-bit software is "upwardly" compatible. That is, a program which runs on a 800 with 16K will also run on a 800XL with 64K or a 130XE with 128K. Incompatibility problems are rare today and can almost always be taken care of by the Atari Translator disk or FIX-XL, a public domain program (**Antic Catalog**, \$10, PD0026.)—ANTIC ED*

XM301 PRO*TERM

Is Mathew Arrington's modem program PRO*TERM (**Antic**, August 1985) compatible with the new Atari XM301 modem?

Gary D. Reed
Santa Ana, CA 92704

Yes, and it works without modification. Just plug it in.—ANTIC ED

Help!

SSSNAKE!!!

Sssnake!!! (October, 1986) tends to crash after about 10 minutes under certain conditions of play. If you're one of the people

```
MX 570 FS1=FS1-N*75FS1>N:IF FS1<>N THEN 5
      MY 571 POKE VUD,PUR:FOR I=N TO 200:POKE U
          F,I:POKE VF,I+TN:POKE BLF,I:NEXT I:GOT
              0 2000
```

who has gotten the message "Error 13 at 571," you can fix the listing by substituting the following two lines.

226 Lincoln Road
Miami Beach, FL 33139

S & S

S & S Wholesalers, Inc.

ATARI HARDWARE

1050 Disk Drive	\$124.77
1027 Printer	\$ 99.00
800 XL	\$ 69.00
65XE	\$ 79.00
XMM 801 Printer	\$199.00
Atari 850 Interface	\$124.90
Data Casset XM11	\$ 39.77

EPSON PRINTERS

LX 80 w/Tractor	\$259.90
FX 85	\$379.90
FX 268	\$504.90

1040 COLOR & MONO SYSTEMS

IN STOCK
CALL FOR PRICING

SPECIAL

Hippovision Video Digitizer	\$119.00
Okinate 10 Color Printer with Plug-n-Play	\$179.90

SYNAPSE

Syncalc	\$ 32.77
Synfile +	\$ 32.77
Templates	\$ 14.77
Synchron	\$ 32.77
Syntrend	\$ 32.77

ATARI ST SYSTEMS

520 ST Computer	
SF 354 Disk Drive	
SC 1224 Monitor	
Basic Logo First Word	\$747.77
w/SF 314 Disk Drive add \$112.00	

SONY

Winner's 3 1/2" DSDD	\$ 21.50
SSDD 3 1/2"	\$ 17.90
DSDD 3 1/2"	\$ 23.50
DSDD 3 1/2" w/ free case	\$ 9.90

PANASONIC PRINTERS

KXP 1080	\$199.00
KXP 1091	\$249.00
KXP 3131 Daisy Wheel	\$279.00
Panasonic Ribbons	\$ 8.77
Parallel Printer Cable	\$ 18.70

ST HARDWARE

Atari 20 MB Hard Drive	CALL
SF 354 Drive	\$139.90
SF 314 Drive	\$189.90
SC 1224 Monitor	\$299.90

ATARI 128K Word Processing System

130XE Computer	
1050 Disk Drive	
1027 Printer	
Atariwriter Plus	
2 Games	\$377.77
w/ XMM 801 Printer	\$447.77
Special Order Before Dec. 20 and Receive Samsung Green Monitor for \$39.00	

BLANK DISKETTES SPECIAL

PRECISION by XIDEX	
DSDD 5 1/4"	\$ 7.90
Box of Ten	
Bonus by Verbatim	
DSDD 5 1/4"	\$ 8.25
Box of Ten	

MICRO-PROSE

Gunship	\$ 21.77
Top Gunner	\$ 19.77
F-15 Strike Eagle	\$ 20.77

OSS

ALL PROGRAMS
AVAILABLE
CALL FOR
BEST PRICING

KOALA TECHNOLOGIES CLOSEOUT

Koala Pad	\$ 39.90
Muppet Learning Keys	\$ 14.90

SPECIAL

Atari SM 801 Modem	\$ 37.77
AVATEX 1200 Baud Modem	\$ 99.00

BATTERIES INCLUDED

Paperclip	\$ 31.77
Paperclip w/Spellpack	\$ 37.77

ST SOFTWARE

Personal PASCAL	\$ 44.97	Habbacom	\$ 29.77	Infocom	\$ 29.77	Call	Mark Williams 'C'	\$107.97
MCC PASCAL	CALL	Easy Draw	\$ 89.97	Mindshadow	\$ 23.77	Lattice	'C' Compiler	\$ 89.97
Hippo 'C'	\$ 44.97	D.E.G.A.S.	\$ 23.77	Hacker II	\$ 29.77	Hippo	Bisk Utilities	\$ 29.77
Macro Assembler	\$ 47.97	Rogue	\$ 23.77	Borrowed Time	\$ 29.77	Hippospell		\$ 23.77
Hippo RAM Disk	\$ 20.97	Winter Games	\$ 23.77	Winnie the Pooh	\$ 14.97	Degas	Elite	\$ 47.77
Leader Board	\$ 23.77	DB Master	\$ 29.77	The Pawn	\$ 26.97	Silent Service		\$ 23.77
Habba View	\$ 44.97	Printmaster	\$ 23.77	Kings Quest III	\$ 29.77	SkyFox		\$ 28.77
Habba Writer	\$ 44.97	Sundog	\$ 23.77	Homework Helper	\$ 29.77			

ORDERS ONLY

1-800-233-6345

CUSTOMER SERVICE OR IN FLORIDA (305) 538-1364

FREE FREIGHT ON ALL ORDERS OVER \$100.00

Orders under \$100.00 add \$4.00 shipping and handling. C.O.D. orders add \$4.00. Hardware prices reflect a 3% cash discount. Add 3% for VISA/MC
AMEX on hardware only. Personal checks allow 2 wks for processing

ORDERS RECEIVED BEFORE 12:00 PM WILL BE SHIPPED SAME DAY. Florida residents add 5% sales tax

IF YOU CAN FIND A BETTER ATARI ST PROGRAM WE'LL BUY IT FOR YOU!*

Full GEM interfacing, convenient Quick Keys, and many other unique features of our own.



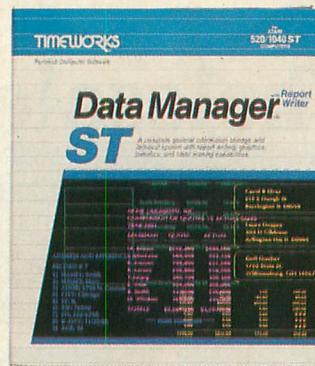
WORD WRITER ST with Spell Checker

A full-featured, professional word processing system for home and business use. You get:

- A Continuous Spell Checker that identifies misspelled words as you are typing your document.
- An additional 85,000 word, built-in Spell Checker that checks your entire document – at your command!
- On-Screen underlining, *italics* and **boldface** – as you write.
- An Outline Processor that quickly organizes notes, facts, and ideas in convenient outline format.
- Every other feature you'll need for everyday word processing, plus most of the features found in more expensive programs.

With Timeworks you get more than software...

You Get Our Customer Technical Support Team – free to all registered users.



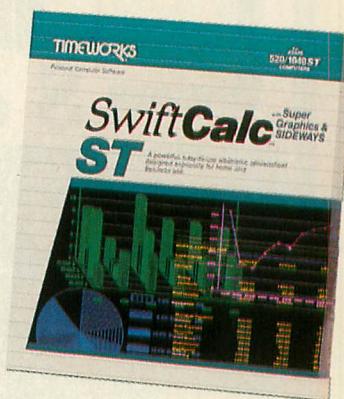
DATA MANAGER ST with Report Writer

A complete general information Storage and Retrieval System with report writing, business graphics, and label making capabilities. Plus, you get:

- Flexibility that allows you to modify your data base structure by changing the size or position of fields of information – at any time.
- A complete Report Writer that generates customized data reports. You specify the title, location, and sequence of each column.
- An extensive Business Graphics Package with pie charts, bar charts, line plots, point plots, hi-lo-close stock price plots, and more.
- A Label Maker that prints your important information onto all types of labels.

With Timeworks you get our Money Back Guarantee*

If you can find anything that works better for you – and it's available – we'll buy it for you. Details inside every Timeworks package.**



SWIFTCALC ST with Sideways

A state-of-the-art spreadsheet for home and business use. You get:

- 8192 rows and 256 columns provide up to 2,048,000 cells (locations) in which to place information.
- Super Graphics graphically display and print out business information using pie charts, bar charts, line plots, point plots, hi-lo-close stock price plots, and more.
- Windows allow you to work on two sections of your spreadsheet simultaneously.
- Sideways lets you print all columns on one continuous sheet . . . sideways.
- Help Screens, help you use the program – without referring to your manual.
- Formatting – Choice of five formats: Decimal (up to 9 places); Graphics; Exponential Notation; \$ Sign & Commas.

You Get Our Liberal Upgrade and Exchange Policy – Details are inside every Timeworks package.

For the Atari 520/1040 Computers.***

Suggested Retail List Price:
\$79.95 each

Available now at your favorite dealer, or call Timeworks.

TO ORDER CALL:
1-800-535-9497

These programs are not copy-protected

These Programs
INTERFACE
with Each Other

TIMEWORKS

More power for your dollar

Timeworks, Inc. 444 Lake Cook Road, Deerfield, Illinois 60015
312-948-9200

© 1986 Timeworks, Inc. All rights reserved.

** Offer expires 90 days after date of original purchase.

*** Registered trademark of Atari Corp.

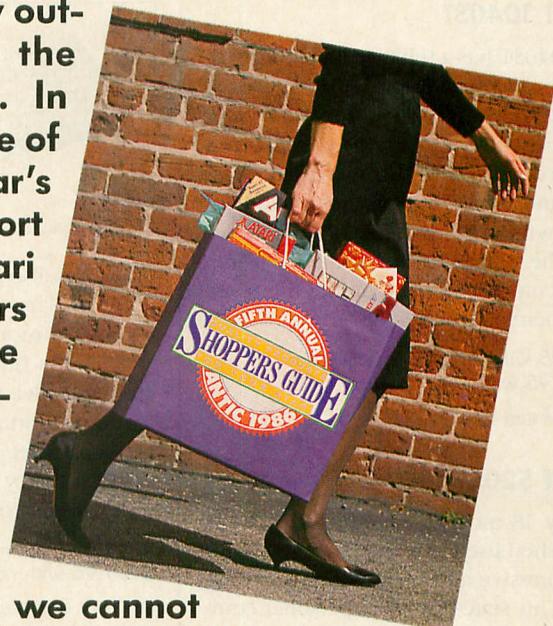
CIRCLE 069 ON READER SERVICE CARD

FIFTH ANNUAL QUALITY PRODUCTS SHOPPERS GUIDE FOR YOUR ATARI ANTIC 1986

THE FIFTH ANNUAL ANTIC SHOPPERS GUIDE is this magazine's selection of 100 best products—software, hardware and peripherals—available for 8-bit Atari computers during the 1986 Holiday Season.

Because this has truly been a year of renaissance for the entire Atari community, we Atarians currently have many outstanding products on the market to choose from. In order to provide sufficient coverage of all these 1986 products, this year's Antic Shoppers Guide will report only on products for the 8-bit Atari Computers. A full-scale ST Shoppers Guide is currently featured in the Winter issue of Antic's sister publication, **SStart: The ST Quarterly**.

In certain major categories such as printers, modems and video monitors, so many makes and models are Atari-compatible that we cannot possibly test every product on the market. For these categories, Antic picks the best products with which we have had first-hand experience.

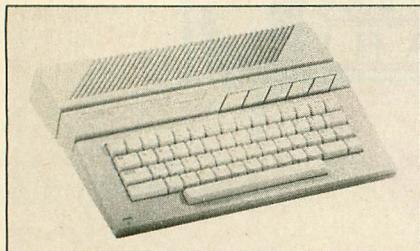


BY GREGG PEARLMAN, ANTIC JUNIOR EDITOR

8-BIT COMPUTERS

ATARI 130XE

The Atari 130XE is a 128K-memory computer that's capable of running "serious" productivity software without any



compromise—word processors with built-in spelling checkers, large spreadsheets and databases, etc. Yet it also has Atari's traditionally excellent graphics and ease of programming. The 130XE runs all the software written for any previous 8-bit Atari model, and the keyboard action is

nothing short of outstanding. Overall, the 130XE is the best value in 128K personal computers today.

\$149.95

CIRCLE 150 ON READER SERVICE CARD

ATARI 65XE

The 65XE is essentially the Atari 800XL repackaged in sturdy gray plastic to match the rest of the new Atari computer line. It is a worthy successor to 800 and 800XL, continuing in the tradition of the best 64K personal computers ever brought to market. Available for considerably less than the low list price at mass merchandisers, the 65XE is a fine choice for first-time computer buyers with its solid base of good software and self-teaching books.

\$99.95

CIRCLE 150 ON READER SERVICE CARD

Atari Corporation 1196 Borregas Ave. Sunnyvale, CA 94086 (408) 745-2000

16-BIT COMPUTERS

ATARI 1040ST

The 1040ST has a full megabyte of memory along with all the sterling features of the 520ST. It is also a bit more self-contained than its little brother, with a built-in double-sided disk drive that stores 720K and a built-in power supply to help cut down on the number of outside cables. The 1040ST is sold primarily at specialty computer stores, unlike the more mass-merchandised 520ST.

\$999.95 with monochrome monitor
\$1,199.95 with color monitor

CIRCLE 150 ON READER SERVICE CARD

ATARI 520ST

In only 18 months, the Atari 520ST has established itself as a major winner, with an impressive and fast-growing software base. This state-of-the-art personal computer boasts a fast, powerful Motorola 68000 microchip with 512K memory. (Independent upgrades to 1Mb are widely available for about \$150.) The ST comes fully equipped with a 360K, 3 1/2-inch disk drive, a two-button mouse and the easy-handling GEM operating software with its icons and drop-down menu win-

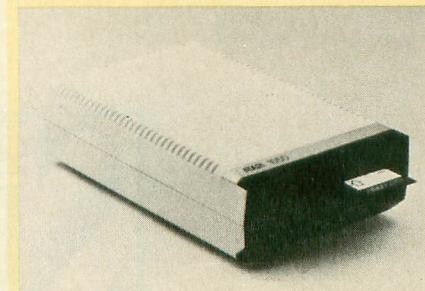
dows. You also get a choice between a 512-color RGB monitor and a 640 x 400 high-resolution monochrome monitor.

The ST's built-in connector ports include parallel and serial interfaces, MIDI for professional music-making and three types of video output. The keyboard includes a 10-key pad, one-touch cursor selection and 10 programmable function keys.

\$799.95 with monochrome monitor
\$999.95 with color monitor

CIRCLE 150 ON READER SERVICE CARD

See the December-January issue of **STart: The ST Quarterly** for an in-depth ST Shoppers Guide with a full listing of software and peripherals.



ATARI 1050

The straightforward, reliable 1050 disk drive is the proven workhorse of Atari data storage. Just pop in your floppy disk and click down the latch. The busy light starts flashing and your software goes to work. The 1050 holds 86K of disk data in standard density. Using the enhanced density option of Atari DOS 2.5, the 1050's disk storage capacity goes up to 122K. Planned for debut at the November, 1986 COMDEX trade show is a new 3 1/2-inch disk drive for 8-bit Atari computers, with a new DOS and dramatically greater storage capacity.

\$199.95. Atari Corp., 1196 Borregas Avenue, Sunnyvale, CA 94086. (408) 745-2000.

CIRCLE 150 ON READER SERVICE CARD

ASTRA ONE

Astra's The One (\$299) is a double-sided, double-density drive with direct-drive motors. The **Astra 1001** (\$250) disk drive is single-sided, double density, and the **2001** (\$395) is a single-sided twin disk drive. The **Big D** (\$495) is the double-sided version of the 2001. All prices are approximate.

Astra Systems, 2500 South Fairview, Unit L, Santa Ana, CA 92704. (704) 549-2141.

CIRCLE 151 ON READER SERVICE CARD

SUPRADRIVE HARD DISK

With 10 million bytes of data available virtually instantly at the touch of a key, the SupraDrive will dramatically change the way you use your computer. The first hard disk made for Atari 8-bit computers has proven itself a dependable performer and operates many Atari bulletin boards today. The SupraDrive stores the equivalent of more than 100 floppy disks. Our **Antic Supradrive** contains every 8-bit program ever published in the magazine—and we have seven megabytes left.

\$799. Supra Corp., 1133 Commercial Way, Albany, OR 97321. (503) 967-9075

CIRCLE 153 ON READER SERVICE CARD

PRINTERS

ATARI XMM801

The **XMM801** dot-matrix printer prints bi-directionally, has graphics capabilities and is easy to operate. Our Atari Planetarium printouts on the XMM801 were every bit as good as those on the Star Micronics SG-10. The printer is easy to set up and has a well-indexed 73-page manual. (See review elsewhere in this issue.)

\$219.95 Atari Corp., 1196 Borregas Avenue, Sunnyvale, CA 94086. (408) 745-2000.

CIRCLE 150 ON READER SERVICE CARD

STAR NL-10

The NL-10 is Star Micronics' latest in the ultra-popular line of full-featured printers that included the discontinued Gemini 10X and Star SG-10, as well as the current **NX-10** (\$349) which is compatible with the Epson FX-80. An outstanding new near-letter-quality font and an expanded set of control buttons on the top panel are among the additions to the fast, sturdy, easy-operating NL-10 that provides every standard feature at a most affordable price. The NL-10 requires Star's \$60 interface cartridges, which are also available for the IBM PC and Apple.

\$319 plus \$60 parallel interface. Star Micronics, Inc., 200 Park Avenue, New York, NY 10166. (212) 986-6770.

CIRCLE 155 ON READER SERVICE CARD

MONITORS

COMMODORE 1802

It's unexpected for **Antic** to publicize a monitor by Atari's arch-rival. But the Commodore 1702, predecessor of the new 1802, was the most widely-used color monitor reported in our recent ANTIC ONLINE survey. Commodore monitors are an outstanding price value and boast excellent color with separate chrominance and luminance input. Someday Jack Tramiel will probably get around to bringing out a fine Atari color monitor for 8-bit computers the way he did at Commodore. Until then, check out the 1802.

\$249. Commodore Computer, 1200 Wilson Drive, West Chester, PA 19380. (215) 436-4200.

CIRCLE 157 ON READER SERVICE CARD



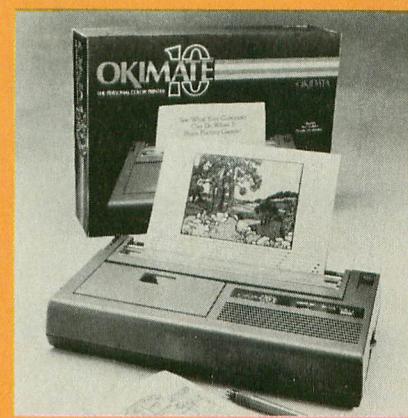
AMDEK 300A

This amber monochrome monitor is ideal for word processing and database or spreadsheet entry because it's so easy on the eyes. Amdeks were the most popular monochrome monitors with Atari owners responding to our ANTIC ONLINE survey.

\$199. Amdek, 2201 Lively Blvd., Elk Grove Village, IL 60007. (312) 364-1180.

CIRCLE 158 ON READER SERVICE CARD

COLOR PRINTER



OKIMATE 10

Color printing is what you get from the small, quiet and inexpensive Okimate 10 thermal printer. The Oki prints 8" x 5 1/4" color images on single-sheet or tractor-feed paper. Its color printouts can be bright and crisp, if you use coated ink-jet paper plus the RAMbrandt graphics software described in the Shoppers Guide software section.

\$238 including Atari interface. Okidata Corp., 532 Fellowship Road, Mt. Laurel, NJ 08054. (609) 235-2600, (800) OKIDATA.

CIRCLE 156 ON READER SERVICE CARD

ENHANCEMENTS

ATARI XEP80

The long-awaited plug-in 80-column card is here at last. It boasts a razor-sharp text display, plugs into either joystick port and carries its own built-in Centronics parallel printer interface. It works with both monochrome and color monitors to produce bit-mapped graphics, international and graphics characters, inverse video or blinking text, underlining, double-high or double-wide text. Just keep in mind that it may be a little while before your favor-

ite software is made compatible with this smart little 80-column box.

\$79.95. Atari Corp., 1196 Borregas Avenue, Sunnyvale, CA 94086. (408) 745-2000.

CIRCLE 150 ON READER SERVICE CARD

ICD MULTI I/O BOARD

This important new I/O peripheral adds five functional devices to your 800XL (or 130XE with \$19.95 adaptor) via the parallel bus. A 256K or 1Mb RAMdisk can partition its memory into multiple disks and

be used as a print spooler. A parallel printer interface can be used with standard cables. An RS-232 port will work with serial modems or printers and includes a built-in 850 handler. A hard disk interface supports multiple drives in a variety of formats. An optional monochrome 80-column board (\$99.95) is due for the holidays.

\$199—256K, \$349—1Mb. ICD Inc., 1220 Rock Street, Rockford, IL 61101. (815) 968-2228.

CIRCLE 159 ON READER SERVICE CARD

America's
Bestselling
Naval Simulation!

Captain's Log... War Date 10.01.44



"Captain's Log, October 1, 1944, 0250 Hours. Fleet submarine USS Hammerhead proceeding Southwest at cruising speed. Our mission: intercept enemy convoy off the coast of Borneo. Disperse and destroy."



"0300 Hours. Two hours until dawn. Radar picks up convoy, escorted by two destroyers. We believe that one of the enemy's valuable cargo ships is part of convoy formation."



"0400 Hours. Lookouts on the bridge. Target identification party reports one cargo ship, 4,000 tons, troopship of 10,250 tons, with two *Kaiyokan*-type escorts. Moving into attack position."

Tandy 1000/IBM PC Jr. screens shown



"0500 Hours. Sound General Quarters! Battle stations manned. Preparing for torpedo run. Gauge Panel OK. Periscope OK. Charts and Attack Plot Board OK. All mechanical systems OK."



"0525 Hours. Torpedo rooms report full tubes forward and aft. Battery at full charge for silent running. We hope water temperature will provide thermal barrier to confuse enemy sonar."



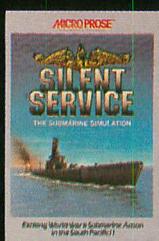
"0600 Hours. We are at final attack position. Convoy moving at 10 knots. Target distance decreasing rapidly... Crash Dive! Escorts have spotted us and are turning to attack! Rig to run silent."



"0700 Hours. Depth charged for one hour. Some minor damage, but repair parties at work. Destroyer propeller noises receding. We'll come to periscope depth for our return punch."



"0715 Hours. Torpedo tubes 1, 2, 3 fired. Two destroyers hit and sinking. One of the enemy's last cargo ships coming into 'scope view — an ideal target position. On my mark... Fire Tube 4! Fire 5!"



"Superb" raves Scott May in *On Line*, "strategic intensity and heart-pounding action have rarely been merged this successfully." *Analog* calls it flatly "the best submarine simulation so far." *Compute* comments "Silent Service's detail is astonishing." Join the more than 150,000 computer skippers who have volunteered for *Silent Service*, the naval action/tactics simulation — from MicroProse.

Silent Service is available for Commodore 64™/128™, Amiga™, Apple II family, Atari XL/XE, Atari ST, IBM PC/PC Jr. and Tandy 1000, at a suggested retail price of \$34.95 (Atari ST and Amiga, \$39.95).

Commodore, Amiga, Apple, Atari, IBM, and Tandy are registered trademarks of Commodore Electronics, Ltd., Commodore-Amiga Inc., Apple Computer, Inc., International Business Machines Corp., and Tandy Corp., respectively.

Available from your local retailer. If out-of-stock, contact MicroProse directly for further information on our full range of simulation software, and to place Mastercard/Visa orders.

MICRO PROSE
SIMULATION • SOFTWARE
120 Lakefront Drive • Hunt Valley, MD 21030 • (301) 667-1151

HARDWARE



RAMBO XL

Make your 800XL or 1200XL twice as powerful as a 130XE with the RAMBO XL, a 256K hardware modification for XL computers. It makes your computer compatible with the 130XE's RAMdisk in "CPU mode" for extended memory, meaning that the Atari DOS 2.5 RAMdisk and BASIC XE can run on your XL after installation of RAMBO XL.

\$49.95, \$30 installation, \$28 for 256 RAM chip set. ICD Inc., 1220 Rock Street, Rockford, IL 61101. (815) 968-2228.

CIRCLE 159 ON READER SERVICE CARD

RAMCHARGER

Enhance your 8-bit computer's memory with RAMcharger RAMboards (256K, 512K or 1Mb memory). Installation is simple. Just plug in the board—and get 288K available with Synapse Software's Syncalc and Syncfile+, up to 8,000 sectors of RAMdisk, and included MYDOS software.

\$149.95—256K; \$199.95—512K; \$299.95—1Mb. Magna Systems, 147-05 Sandford Avenue, Suite 4E, New York, NY 11355. (718) 939-0084.

CIRCLE 160 ON READER SERVICE CARD

THE RAT

If you're clicking on icons and getting things done on your Atari without touching the keyboard, chances are you're using an ST. Now you can have that same convenience on your 8-bit computer with The Rat from Zobian Controls. Software such as Super 3-D Plotter, RAMbrandt and AtariArtist are Rat-compatible, and more is on the way.

\$69.95. Zobian Controls, P.O. Box 6406, Wyomissing, PA 19610. (215) 374-5478.

CIRCLE 161 ON READER SERVICE CARD

MICROFLYTE JOYSTICK

Instead of renting a real airplane for an hour, why not pick up the MicroFlyte ATC Joystick and take control of Sublogic's Flight Simulator II with a minimum of keystrokes? This self-centering *analog* joystick uses two potentiometers to recognize the direction and magnitude of a turn—it helps you fine-tune your flying. However, it works only with Flight Simulator II or the programs you write yourself.

\$59.95. MicroCube Corp., P.O. Box 488, Leesburg, VA 22075. (703) 777-7157.

CIRCLE 164 ON READER SERVICE CARD

EPYX 500XJ JOYSTICK

It's curved to fit your hand. The fire button is angled for your trigger finger. Shaft switches allow you to hear each move of the stick. And you might have to run it over in the car to break it. The 500XJ joystick has been a real joy to the Antic staff and saved us a lot of cramped hands. Our game scores seem to be better too.

\$16.95-\$19.95. Epyx Inc., 600 Galveston Drive, Redwood City, CA 94063. (415) 366-0606.

CIRCLE 165 ON READER SERVICE CARD

U. S. DOUBLER

The U.S. Doubler adds 128 bytes of RAM and a new ROM chip to your Atari 1050 disk drive, allowing true double density with 256-byte sectors. The drive can still be used in its normal single or enhanced density modes. When packaged together with SpartaDOS the price rises to \$69.95. Version 1-4 allows your drive to be configured as drive 1 to drive 4. Version 5-8 allows you to configure the drive as 5 to 8, which is useful if you have a RAMdisk.

\$39.95. ICD Inc., 1220 Rock Street, Rockford, IL 61101. (815) 968-2228.

CIRCLE 159 ON READER SERVICE CARD

INTERFACE

P:R: CONNECTION

The Atari 850-compatible P:R: Connection is a better mousetrap. Connections, software and applications remain the same. But the P:R: Connection gets its power from the host computer, eliminating need for an external power supply. The P:R: connects your Atari to a printer, a modem and one other device, such as a serial EPROM programmer. The outstanding documentation contains the complete R: driver source listing.

\$69.95, 48K disk. ICD Inc., 1220 Rock Street, Suite 310, Rockford, IL 61101-1437. (815) 968-2228.

CIRCLE 159 ON READER SERVICE CARD

SPEECH/SOUND

VOICE MASTER

The Covox Voice Master is to sound what Computereyes is to pictures: it is a sound digitizer. This hardware-software system grabs sounds, converts them into digital code (in any of three speeds) and stores them for manipulation in various interesting ways. The Voice Master lets you compose digital music by humming or singing into the Covox headset/microphone. It also features surprisingly good speech recognition. Included BASIC demonstration programs are a talking alarm clock, a voice-recognizing calculator and a blackjack game that listens and talks back.

\$89.95, 48K disk. Covox Inc., 675-D Conger Street, Eugene, OR 97402. (503) 342-1271.

CIRCLE 167 ON READER SERVICE CARD



SOUNDMOUSE

It works like a mouse, but it isn't. It's a sound-activated controller that plugs into the joystick port and listens for sounds, particularly low-pitched tones. It continuously translates the sound volume into a value for the paddle register. The SoundMouse responds to the sounds—perhaps your program can be activated with a shout or hand clap. You could use the SoundMouse as a joystick trigger with some games, steering with the stick and shooting by yelling "Fire!"

\$29.95, 48K disk. Soundsoft Inc., P.O. Box 740, 10 Maple Avenue, Andover, NJ 07821. (201) 786-6060.

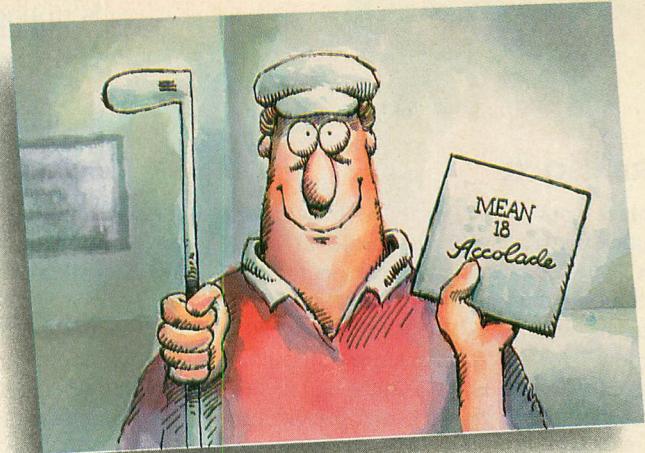
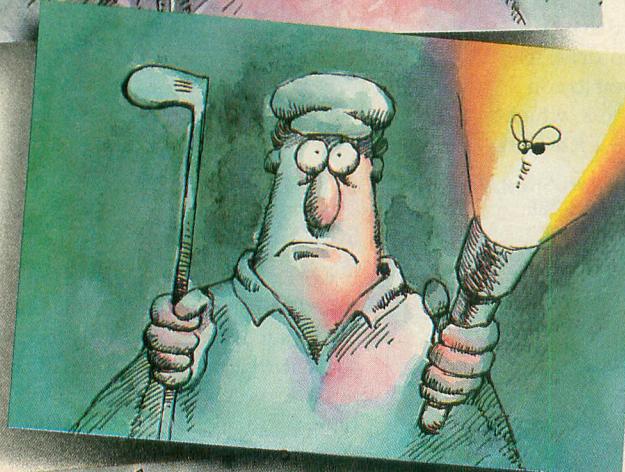
CIRCLE 168 ON READER SERVICE CARD

MODEMS

ATARI SX212

Brand-new from Atari is this speedy 1200 baud, Hayes-compatible modem that plugs directly into Atari computers or daisy-

Now, nothing can keep you from your appointed rounds.



Laugh at the weather. Putt in the middle of the night. Tell your secretary to hold all calls. With Accolade's MEAN 18, all the excitement and challenge of real golf is right on your computer.

MEAN 18 delivers the kind of realism and playability you've come to expect from Accolade. This is golf the way it was meant to be enjoyed...

without spending your day decoding the instruction manual. You can hit a bucket of balls at the driving range, play from the pro or regulation tees, even ask your caddy to suggest your clubs.

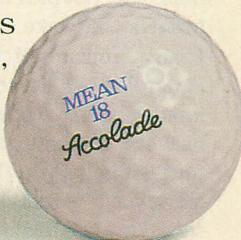


Once you've mastered MEAN 18, there's the challenge of playing on three of the world's legendary golf courses, all capable of bringing any touring pro to his knees. With The Course Architect, you can even design your own grueling course complete with menacing bunkers and greens on the edge of an ocean.

Available for IBM, Atari ST and Amiga systems.

Accolade, 20833 Stevens Creek Boulevard, Cupertino, California 95014. Telephone 408-446-5757.

Mean 18.



Atari ST heats up with "Strip Poker..." and more.



Examine Artworx' expanding list of ST software:

STRIP POKER is the classic computer program. Play against Suzi and Melissa; the more you win, the more they take off! **Only \$39.95**
THAI BOXING brings oriental kick boxing to the ST with stunning 3-D graphics and fast action. **Only \$19.95**
HOLE IN ONE GOLF plays like the real thing and includes an easy-to-use Editor for designing your own golf course. **Only \$29.95**
BRIDGE 4.0 has full graphic display of all hands, allows the user to be dealt good cards all the time and is completely mouse-driven. **Only \$29.95**
COMPUBRIDGE is Artworx' bridge tutorial, utilizing 10 chapters covering all aspects of the game. **Only \$29.95**
PEGGAMMON is a new and innovative approach to backgammon. Play against the computer or with a friend in the two-player mode. **Only \$17.95**
MAILIST handles medium to large sized lists. It zip code sorts, alphabets, selects by keyword, prints labels, and more. **Only \$17.95**
BAKER STREET DETECTIVE brings you back to 1893 London with mysteries to solve just like Sherlock Holmes. **Only \$17.95**

Artworx®

Artworx Software Co., Inc., 1844 Penfield Road, Penfield, N.Y. 14526 (716) 385-6120 · (800) 828-6573

CIRCLE 003 ON READER SERVICE CARD

CARINA - THE BETTER BBS

Presenting the most powerful bulletin board ever written for the Atari 8-bit computer. The Carina BBS is absolutely the most expandable bulletin board for your Atari. It has features that you will find on most bulletin boards plus many other features that make telecommunications easier, more fun, and a lot less monotonous.

WHY IS THIS BBS SO MUCH BETTER?

The power of this system is mostly attributed to the Modem Operating Environment. It makes possible the ability to run BASIC programs WITH LITTLE OR NO MODIFICATION on your bulletin board. It also allows you as the Systems Operator (SysOp) of the Carina BBS to drop into BASIC ON-LINE at any time and make modifications to your program from across the country if need be. No other Atari bulletin board has this feature.

YOU MEAN I CAN CHANGE THE PROGRAMS?

Yes, the Modem Operating Environment eliminates the need to perform modem operations. The bulletin board is written in understandable BASIC and is, in fact, designed with modification in mind. The Carina BBS is also module based. This means you are no longer restricted by the memory of your computer, but rather by the amount of on-line storage on your disk drives and your ramdisk. The Carina BBS itself is not 1 but 7 separate programs. It is a massive system that can be expanded beyond your imagination.

WHAT PROGRAMS COME WITH IT?

The modules included are: The waitcall module which performs user logon/logoff functions, the bulletin board itself which controls all message bases and databases, the file-transfer module with X-Modem upload/download transfer protocol, the message editor (with extensive word processor-like functions), the SysOp commands with the most powerful functions available for any bulletin board on-line, the sub-commands module which contains miscellaneous extra functions, and an on-line trivia game. The Carina BBS has a total of 44 commands including 17 SysOp functions. It is easy to add any other modules of your own, plus there is plenty of room to add any other functions in different modules.

Now you can RAMCHARGE Your Atari® 800 with the new Magna 1MEG RAM-Board

- Enhanced memory capabilities
- Simple one-minute plug-in installation
- 100% Axlom® compatibility
- 288K available with Synfile+™/Syncalc™
- Up to 1 million bytes on a single board
- Up to 8000 sectors available as a Ramdisk
- MYDOS™ Ramdisk software included
- XL/XE/ST upgrades available also — call

RAMCHARGER 256K — \$149.95

RAMCHARGER 512K — \$199.95

RAMCHARGER 1MEG — \$299.95

Ramchargers use custom printed circuit boards. We do not rewire your "old" Atari 16K boards as others do.

Terms: Check, Money Order, COD
Add \$4.50 shipping & handling.
New York State Residents add local sales tax

**Magna
Systems**
"We build power"

MAIL TO:
MAGNA SYSTEMS
147-05 Sandford Ave., Suite 4E
Flushing, N.Y. 11355
Phone: 718-939-0908
 Bulletin Board 24 hrs. — 212-828-7658

WHAT ELSE CAN IT DO?

- Runs at 300, 1200, or 2400 baud in ASCII and/or ATASCII modes
- Works with Hayes (or compatable) modems, all Supra (MPP) modems including Supra 1200 with interface, Avatex 1200, Q-MODEM, and now the XM301 and 1030 (with ring detector)
- Works with the 850 interface, ATR8000, or P:R:Connection
- Supports the R-Time 8 cartridge
- Also works on hard drives or slave drives of any size, in any density
- Works with most DOS's and most BASIC languages (Atari, XL, or XE)
- Run BASIC programs with little or no modification, program in BASIC, or even go to a ram-resident DOS (Like SpartaDOS) on-line!
- Electronic mail system
- Uses macros or full-word commands
- Allows editing of messages already posted
- Virtually an unlimited number of message bases, and databases
- Can work with subdirectories
- Read new mail function
- On-Line games (you can convert your own games to work easily too)
- A day calculating clock plus a 5 line status window at the top of the screen holding 16 items of user information
- Message editor with many editing commands and word-wrap
- Self-Compacting message bases eliminating the need for constant maintenance.
- Automatic validation and access control configuration.

For an in-depth on-line demonstration, call 305-793-2975

Price Reduction:

Now, get the Carina BBS at the reduced price of only \$55.00 (this includes shipping and tax where applicable).

Supra (MPP) 300 baud modem owners include an extra \$10.00 for the Bitwise System's MPP-Hayes emulator. And now, XM301/1030 (with ring detector) owners, also add \$10.00 for the Bitwise System's XM301-Hayes emulator. Please specify Modem type when ordering.

Carina Software Systems
12390 57th Road North
Royal Palm Beach, FL 33411

CIRCLE 086 ON READER SERVICE CARD

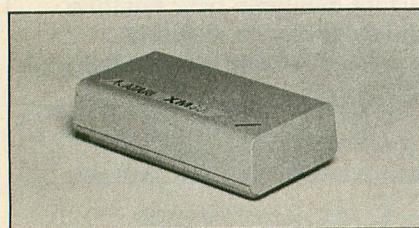
HARDWARE



chains with your peripherals. Comes complete with built-in speaker, signal lights and software.

\$99.95. Atari Corp., 1196 Borregas Avenue, Sunnyvale, CA 94086. (408) 745-2000.

CIRCLE 150 ON READER SERVICE CARD

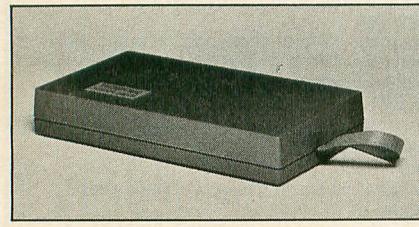


ATARI XM301

This worthy successor to the Atari 1030 builds several advanced features directly into an inexpensive 300 baud modem that plugs directly into your Atari computer. It has auto-dial and auto-answer and doesn't need a separate power supply. Included in the package are a fine 49-page manual and the powerful XE-Term software.

\$49.95, 32K disk. Atari Corp., 1196 Borregas Avenue, Sunnyvale, CA 94086. (408) 745-2000.

CIRCLE 150 ON READER SERVICE CARD



SUPRA 300-AT

Formerly the MPP 1000-E, the 300 baud Supra 300-AT comes with Smart Term software that allows uploading, downloading, auto-dialing, auto-answer and XMODEM protocol. It plugs directly into your Atari computer.

\$49.95. Supra Corp., 1133 Commercial Way, Albany, OR 97321. (503) 967-9075.

CIRCLE 163 ON READER SERVICE CARD

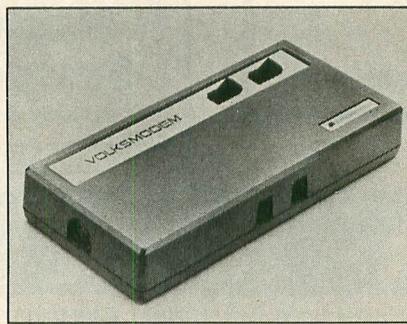
AVATEX 1200-BAUD MODEM

The new Avatex modem gives you inexpensive Hayes compatibility and reliable operation. It operates with a subset of the

Hayes commands that gives you virtually all the important functions. The Avatex usually can be found between \$79 and \$129 at dealers. It requires an 850 or P.R. interface and can also be used with an ST.

\$199. E+E Datacom, 1230 Oakmead Parkway #310, Sunnyvale, CA 94086. (408) 732-1181.

CIRCLE 169 ON READER SERVICE CARD



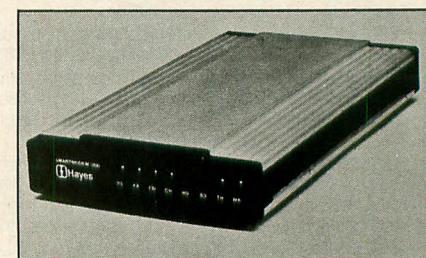
VOLKSMODEM 10

This inexpensive 300 baud modem plugs

directly into the Atari's joystick port 2. Not to be confused with the Hayes-compatible 1200-baud Volksmodem 12 that requires an 850-compatible interface.

\$79.95. Anchor Automation, 6913 Valjean Avenue, Van Nuys, CA 91406. (818) 997-7758.

CIRCLE 170 ON READER SERVICE CARD



HAYES SMARTMODEM 1200

The Smartmodem 1200 is the industry standard that all other modems are judged by. The Hayes offers solid construction, automatically adjusted baud rate, internal speaker, auto-answering and outstanding documentation. Most commercial modem software is written to be compatible with the standard set of Hayes commands. It requires an 850 or P.R. interface and can also be used with an ST.

\$599. Hayes Microcomputer Products, 5835 Peachtree Corners East, Norcross, GA 30092. (404) 449-8791.

CIRCLE 171 ON READER SERVICE CARD

ONLINE SERVICES

COMPUSERVE

CompuServe is the leading online information service, and with good reason. You can get stock quotes, news, and weather reports; make airline reservations, buy merchandise, play games; enter special interest groups (SIGs) on dozens of topics. CompuServe is where you'll find the ANTIC ONLINE edition and three bustling Atari SIGs (8-bit, 16-bit and Atari Developers) with hundreds of 8-bit and ST

programs to download. And upload time is free. Hourly rates are \$6 evenings-weekends and \$12.50 prime time for 300 baud, \$12.50/\$15 for 1200 baud, \$15/\$19 for 2400 baud. \$39.95 entry fee.

500 Arlington Center, Box 20212, Columbus, OH 43220. (800) 848-8199; in Ohio, (614) 457-8600.

CIRCLE 174 ON READER SERVICE CARD

GAMES COMPUTERS PLAY

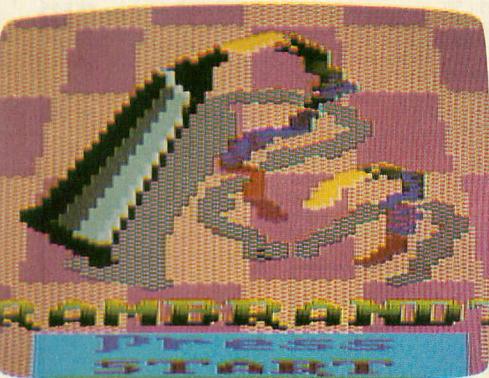
Let your Atari play games with a 300Mb minicomputer that offers spectacular interactive games in color, real-time conferencing, electronic mail and public domain downloading. Evening and weekend rate is \$6 per hour, and prime time rate is \$15 per hour. A \$29.95 sign-up fee includes disks, documentation and \$18 free

Hourly rates and membership fees for commercial online services are subject to change. Contact individual companies for latest information. You'll need a modem to hook up.

SOFTWARE GRAPHICS

RAMBRANDT

RAMbrandt paint software produces color images with KoalaPad or Atari Touch Tablet in five graphics modes and multiple text fonts. You can load pictures from Movie-maker, Micro Illustrator, Micro-Painter and Computereyes. The window mode lets you vertically or horizontally rotate, flip (for T-shirts), animate your picture, or scale



it up or down in size. RAMbrandt has unlimited user-defined brushes, 130XE RAM-disk support and printer dumps for Epson, Star Micronics, C. Itoh, NEC and compatibles. Its Okimate 10 color printer dump produces fine color images. New **Solid Object Module** (\$15.95, AP082) adds easy 3-D object creation to RAMbrandt.

\$19.95, 48K disk. The Catalog, AP0157.

COMPUTEREYES

Connect your Atari to any video camera or VCR and you'll get a digitized black-

connect time.

112 E. Market Street, York, PA 17401. (717) 848-2660.

CIRCLE 175 ON READER SERVICE CARD

GENIE

GENie, the General Electric Information Service, is the newest and least expensive online service, costing \$5 an hour on evenings-weekends, even for 1200-baud modems (\$10 for 2400-baud). Weekday rates are more business-oriented, \$25 per hour for 300/1200 baud and \$45 for 2400 baud. Upload time is free. The SIG-like Atari RoundTable software library has 11 categories and is growing fast.

401 N. Washington Street, Rockville, MD 20850. (800) 638-9636.

CIRCLE 176 ON READER SERVICE CARD



and-white image in less than six seconds. The image can then be modified with standard graphics software. The Computereyes package includes an interface module, software and an owner's manual. For \$399.95, you also get a black-and-white video camera.

\$129.95, 48K disk. Digital Vision, Inc., 14 Oak Street, Suite 2, Needham, MA 02192. (617) 444-0940.

CIRCLE 178 ON READER SERVICE CARD

SUPER 3-D PLOTTER

With this 3-D design and animation program, all you need to do is draw straight-line images from point to point. The program remembers the points of your line drawing, adjusts, redraws and page-flips the completed new image, resulting in a smooth, impressive animation display.

\$39.95, 48K Disk. Elfin Magic Company, 23 Brook Place, East Islip, NY 11730. (516) 581-7657.

CIRCLE 179 ON READER SERVICE CARD

ENVISION

Envision is "the RAMbrandt of character graphics," giving you multi-screen, eight-way scrolling pictures and letting you build animations of up to 128 frames at 10 speeds. Envision's 50-plus commands give you total control over the Atari's text modes. And the program supports GTIA modes 9 and 11. It can create standalone pictures from pictures created by any popular paint program, or produce BASIC and Assembler source code.

\$19.95, 48K disk. The Catalog, AP0185.

VIRTUOSO

Create full-color graphics with the keyboard, joystick or touch tablet, move them in any direction at different speeds, instantly make them larger or smaller—while they're moving—and turn them 360 degrees with Virtuoso Software. If that's not enough, put music in motion. The graphics you create and the movements

you choose, simultaneously produce and control music. Text can be inserted too.

\$49.95. Virtuoso Corp., 125 Duke Ellington Blvd., New York, NY 10025. (800) 528-6060.

CIRCLE 180 ON READER SERVICE CARD

ARTIST UNLEASHED

Using a joystick, KoalaPad or the Rat to control the onscreen painting dot, you can create high-resolution Graphics 8 pictures for saving to disk, inserting in BASIC programs or printing on an Epson-compatible. Enhance or alter the pictures by stretching, inverting, displaying in inverse video, changing colors and rotating in 90-degree increments. The picture editor breaks down a picture into grids for detail work. Used with MTS's **Layout** (\$39.95), you can compose newsletters, posters and advertising materials.

\$49.95, 48K disk. MTS Software, P.O. Box 623, Williamsville, NY 14221. (716) 634-0578.

CIRCLE 181 ON READER SERVICE CARD

GAMES



STAR RAIDERS II

More of a sequel than an update to the original Star Raiders, this game has you jumping between two star systems in your ship, the Liberty Star, and wiping out hordes of Zylons in an attempt to save the Celos IV system. Just fire away at the bad guys, but don't run out of fuel.

\$19.95, 48K disk. Atari Corp., 1196 Borregas Avenue, Sunnyvale, CA 94086. (408) 745-2000.

CIRCLE 182 ON READER SERVICE CARD

KARATEKA

Rescue your loved one from the evil

Software Discounters of America

For Orders Only—1-800-225-7638
PA Orders—1-800-223-7784
Customer Service 412-361-5291



- Free shipping on orders over \$100 in continental USA
- No surcharge for VISA/MasterCard
- Your card is not charged until we ship

ABACUS BOOKS

ST Gem Prog. Ref.
ST Graphics & Sound

ST Internals

ST Logo

ST Machine

CALL

Language

FOR

ST Peeks & Pokes

LOW

ST Tricks & Tips

PRICES

ABACUS SOFTWARE

Assem/Pro ST

CALL

Forth/MT ST

CALL

Paint Pro ST

FOR

Text Designer ST

LOW

Text Pro ST

PRICES

ACADEMY

Typing Tutor ST

\$23

ACCESS

Leader Board (D)

\$25

Leader Board Golf ST

\$25

L.B. Tournament

Disk #1 ST

L.B. Tournament

Disk #1 (D)

Tenth Frame ST

\$25

ACCOLADE

Fight Night (D)

\$19

Hardball (D)

\$19

Mean 18 Golf ST

\$29

ACTIVISION

Borrowed Time ST

\$33

Great American Cross

Country Road Race (D)

Hacker (D)

\$16

Hacker 2 ST

\$33

Little Computer

People ST

\$33

Mindshadow ST

\$33

Music Studio ST

\$39

Paint Works ST

\$44

Tass Times in

Tonetown ST

\$33

AMERICAN EDUCATIONAL COMPUTER

Biology (D)

\$14

French (D)

\$14

Grammar (D)

\$14

Science: Grades 3/4 (D)

\$14

Science: Grades 5/6 (D)

\$14

Science: Grades 7/8 (D)

\$14

Spanish (D)

\$14

ARTWORK

Bridge 4.0 (D)

\$16

Bridge ST

\$19

Compubridge ST

\$19

Hole in One Golf ST

\$19

Mail List ST

\$14

Pegglemon ST

\$12

Strip Poker (D)

\$21

Strip Poker ST

\$25

Female Data Disk 1

\$16

Male Data Disk 2

\$16

Female Data Disk 3

\$16

AVANTAGE

Spy vs. Spy 1 & 2 (D)

\$12

BATTERIES INCLUDED

B-Graph (D)

\$25

Degas ST

\$25

Degas Elite ST

\$49

Home Pak ST

\$33

I'S Talk ST

\$33

Pinball Const. Set (D)

\$9.88

Isgur Portfolio System ST

\$129

Paperclip (D)

\$39

Paperclip w/Spell 130XE

\$39

Thunder ST

\$25

Time Link ST

\$33

BRODERBUND

Breakers ST

\$29

Karateka (D)

\$19

Print Shop (D) \$26

Print Shop Graphics

Library #1, #2, #3 (D) \$16Ea.

P.S. Companion (D) \$23

CBS

Big Bird's Funhouse (D) \$6.88

Big Bird's Special

Delivery (R) \$4.88

Dr. Seuss Fix Up the Mix

Up Puzzler (D) \$6.88

Ernie's Magic Shapes (R) \$6.88

Math Mileage (R) \$4.88

Moviel Musical

Madness (R) \$4.88

Sea Horse Hide

N Seek (R) \$4.88

Timebound (R) \$6.88

*limited qty—

no mail orders please!

CENTRAL POINT

Copy 2 ST \$25

CLOSEOUTS

Dragonriders of Pern (D) \$9

Logic Levels (R)

Chessmaster 2000 (D) \$26

Chessmaster 2000 ST \$29

Financial Cookbook ST \$33

Movie Maker (D) \$23

Skyfox ST \$29

Star Fleet 1 ST \$33

EPYX

Championship Wrestling ST \$25

Rogue ST \$25

Temple Apshai Trilogy ST \$25

Temple Apshai Trilogy (R) \$19

World Champ. Karate (D) \$19

World Games ST \$25

WINTER GAMES ST \$25

WORLD GAMES ST \$25

ATARI® 8-BIT POWER

ALPHA SYSTEMS is constantly innovating to provide more power for your 8-bit Ataris.



You don't need an ST to run high-powered software. Your Atari 400, 800, 800XL, 1200XL or 130XE can compute circles around others with these quality packages. — Don't let our low prices fool you — Super Quality doesn't have to be over priced.

DIGITIZE YOUR WORLD Now you can connect your Atari to a wide range of external interfaces that you can build. This how-to book (over 150 pages) includes all the instructions needed to build a light pen, household appliance controllers, alarm systems, light and motion detectors, voice recognition, and much, much more. The book **Your Atari Comes Alive** includes detailed schematics and instructions for each device. The disk includes the BASIC and Assembler programs to run them. Create your own exciting devices and save money!

Your Atari Comes Alive — Introductory Price **\$24.95**

DIGITIZING POWER

The hardware & software you need to digitize real world sounds and play them on your computer. Make your Atari speak in your own voice

record and play sounds from a complete orchestra.

Play the digitized instruments and sounds from your keyboard, or put them in your own BASIC programs. PARROT is now being used for special effects by professional musicians. Turn your Atari into a digital sound sampler and keyboard. Everything you need to record and play digital sounds **\$39.95**

Additional pre-recorded sound tracks **\$4.95** with purchase of PARROT.

COMPUTEREYES™

Feed the pictures from your video camera or VCR into your computer and save the images as a graphics screen. Put your picture in your own programs, or digitize your favorite movie star.

Our COMPUTEREYES and MAGNIPRINT II + combination special lets you print your pictures in 16 shades of grey with incredible detail. Combine the features of MAGNIPRINT II + and COMPUTEREYES for digitizing power that can't be beat. Koala Pad, Touch Tablet compatible.

COMPUTEREYES and MAGNIPRINT II + **\$119.95**
COMPUTEREYES only **\$99.95**
COMPUTEREYES, B/W VIDEO CAMERA, MAGNIPRINT II +, and CABLE **\$329.95**
GRAPHICS 9 CAPTURE SOFTWARE **\$12.00**

MAGNIPRINT II +

Easily the most powerful and versatile printer package available. Accepts screens from Koala Pad, Print Shop, RAMbrant, MicroPainter, SynGraph, Touch Tablet, Typesetter, Graphics Master, many, many others. Prints in literally hundreds of sizes, shapes, shades, and distortions, including 6 ft. poster printing. Create detail and resolution thought impossible on a standard dot matrix printer. Supports 16 shades of grey and even color printing (you need color ribbons or color carbons for that). Touch-Up your pictures with multi-size and multi-font text. Works on STAR, Gemini, Panasonic, C10H, NEC, EPSON or compatible printers. (850 interface or equivalent required).

Incredibly priced for only

\$24.95

Free BONUS with every MAGNIPRINT II + — PRINTALL prints your programs and files with all Atari inverse and graphics characters.

GRAPHICS TRANSFORMER Create Print Shop icons from your favorite drawing program, a ComputerEyes digitized photo, or saved picture files, Create, Merge, Shrink, or Enlarge to transform your graphics from one to another. Transfer pictures between programs to use the features you need.

ONLY \$22.95

IMPERSONATOR

Cartridge to Disk copy system. Create running backups of any cartridge (up to 16K) on Disk. **ONLY \$29.95**

Scanalyzer

Extract the programming secrets for any Atari program. Scanalyzer easily breaks through protection to let you list and study programs. Works with programs on Disk or Cartridge, finds hidden directories, detects copy protection methods and more. **ONLY \$29.95**

24 HOUR HOTLINE (216) 374-7469

VISA or MasterCard Welcome. Call or Write for our Free Catalog Customer Service (216) 688-9014 9am-3pm EST M-F
 *All for Atari Disk Drive at least 48K required

BONUS: Order any 3 programs and get FREE your choice
 Deluxe Space Games Utility Pack 1000.



PROTECT YOUR PROGRAMS AUTOMATICALLY COPY PROTECTION METHODS EXPOSED



Now the state of the art secrets of software copy protection, piracy, phone phreaking, and hacking are revealed. These comprehensive book and disk packages take you from a novice to an expert in this fast changing field. Everything you need to understand complex protection, and create your own custom methods. Topics include, Unstable Sectors (Phantom or Fuzzy Sectors), Forced CRC Errors, Overfilled Tracks, Short Sectoring, Hardware Data Keys, Cartridge Protection, Cassette Protection, Crackdown on Pirates, New Laws Dealing with Piracy, Hacking, On-Line Security, Phone Phreaking, Building Black Boxes, Pirate Bulletin Boards Systems, Trojan Horse Programs, Logic Bombs, Self-Destructing programs, much, much more.

The disks included with these books contain powerful utilities to let you automatically protect your files. Features include:

- Automatic directory hiding
- Data encryption (stops pirates from changing your copyrights, etc.)
- Limited use option (makes the program self-destruct after a limited number of runs)
- Password option (requires an 8 byte password before the program will run)
- Disk Protection check (have your program check disk protection before running)

Use these methods and more automatically, with no programming skills needed.

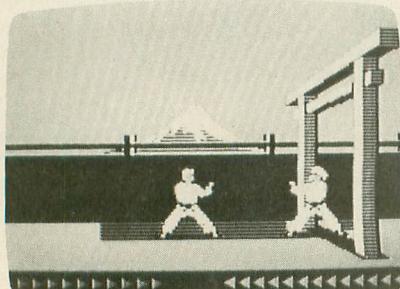
BOOK I and DISK I \$24.95

BOOK II (Advanced protection) and DISK II \$24.95
 Special limited time offer — BOTH SETS for **\$39.95**

Order by phone or send check or money order to:
ALPHA SYSTEMS
 4435 Maplepark Rd.
 Stow, OH 44224
 Include \$3.00 shp & hdg
 (US & Canada), Ohio residents add 5 1/2% sales tax. Foreign orders add \$8.00 shp & hdg.

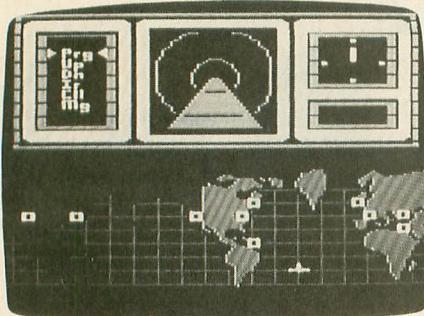


warlord's castle by thwarting his guards with your joystick to kick and punch. Karateka has cartoon-quality graphics, realistic even to the swishing robes as you make your moves.



\$29.95, 48K disk. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903. (415) 479-1170.

CIRCLE 183 ON READER SERVICE CARD



HACKER

Not unlike the film "War Games," you've broken into the computer of a large multinational corporation, where you discover dirty deeds. Make deals with foreign spies and pick up clues, all very hush-hush and all from the comfort of your chair.

\$34.95, 48K disk. Activision, P.O. Box 7286, Mountain View, CA 94039. (415) 960-0410.

CIRCLE 184 ON READER SERVICE CARD



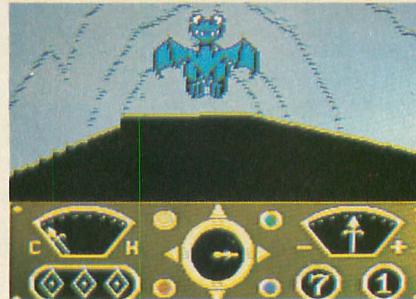
ULTIMA IV

The latest entry in Lord British's popular

graphic fantasy role-playing adventure series lets you carry on complete conversations with other characters as you try to attain perfection in the values of honesty, compassion, valor, spirituality, humility, sacrifice, justice and honor, after which you go to the final challenge: to become an Avatar.

\$59.95, 48K disk. Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403. (415) 571-7171.

CIRCLE 185 ON READER SERVICE CARD



THE EIDOLON

One of the latest Lucasfilm computer games, The Eidolon sends you through a maze of caverns generated by fractal mathematics. Your goal in Epyx's point-of-view fantasy role-playing game is to find and vanquish a dragon on each of 10 levels.

\$29.95-\$39.95, 48K disk. Epyx Inc., 600 Galveston Drive, Redwood City, CA 94063. (415) 366-0606.

CIRCLE 184 ON READER SERVICE CARD



KORONIS RIFT

It's 2049, and you're exploring the Koronis Rift for super weapons left by the Ancients. If you can get by the saucer people and figure out how to use the weapons, you're in great shape. If not, you're Saucer People Chow. In this Lucasfilm game, you'll get plenty of help from your science and retriever droids as you travel the fractal landscape of the planet in your surface rover.

\$29.95-\$39.95, 48K disk. Epyx Inc., 600 Galveston Drive, Redwood City, CA 94063. (415) 366-0606.

CIRCLE 184 ON READER SERVICE CARD

WISHBRINGER, SPELLBREAKER, BALLYHOO

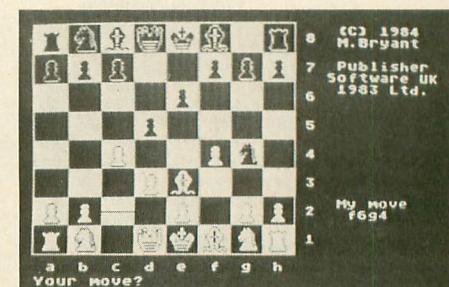
Wishbringer (\$34.95), Infocom's second introductory-level text adventure, opens on the New England coast, where you're dispatched to deliver a letter to an eccentric old lady. Upon delivery, you are thrust into Witchville to rescue her cat, kidnapped by a sorceress called The Evil One. Your only aid is Wishbringer, a stone that grants seven wishes—don't misuse it.

Spellbreaker (\$49.95) concludes Infocom's Enchanter and Sorcerer trilogy. You're now a member of the Circle of Enchanters and your only clue to the ominous disappearance of magic is the discovery of a strange white cube. As you go on, further cubes provide invaluable hints.

In Ballyhoo (\$39.95) you're loitering under the big top after a performance of the Traveling Circus That Time forgot. You overhear a plot to kidnap the ringmaster's daughter. You've got to find her, but you must be stealthy and willing to slip into any disguise.

Infocom, 125 CambridgePark Drive, Cambridge, MA 02140. (617) 492-6000.

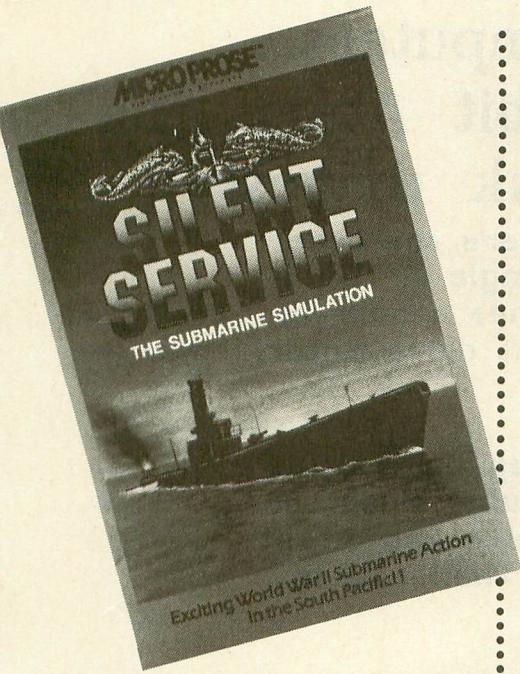
CIRCLE 186 ON READER SERVICE CARD



COLOSSUS CHESS

Colossus Chess is for any chess-lover, whether you're a beginner or a master. The space bar toggles between two screens—one showing the board and the other showing Colossus' "brain" considering thousands of moves. Onscreen elapsed-playing-time clocks add realism, and a game can be saved to disk to be picked up later.

\$15.95, 48K disk. The Catalog, AP0161.



SILENT SERVICE

This impressive simulation of World War II submarine operations in the Pacific takes you right to the bridge of a sub as your periscope searches the ocean for enemy vessels.

\$34.95, 48K disk. MicroProse Software, 120 Lakefront Road, Hunt Valley, MD 21030. (301) 667-1151.

CIRCLE 188 ON READER SERVICE CARD

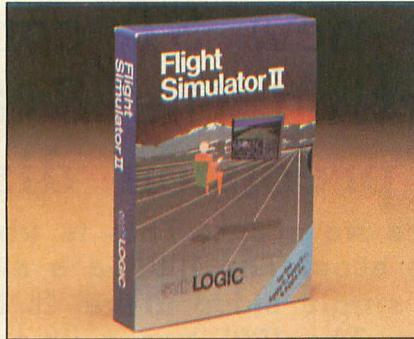


F-15 STRIKE EAGLE

Launch into aerial combat with this realistic, joystick-controlled computerization of seven sky battle-zones over the Middle East and Vietnam. You'll get state-of-the-art weapons systems, computerized radar, eight supersonic guided missiles, 18 bombs and a 20mm cannon.

\$34.95, 48K disk. MicroProse Software, 120 Lakefront Road, Hunt Valley, MD 21030. (301) 667-1151.

CIRCLE 188 ON READER SERVICE CARD

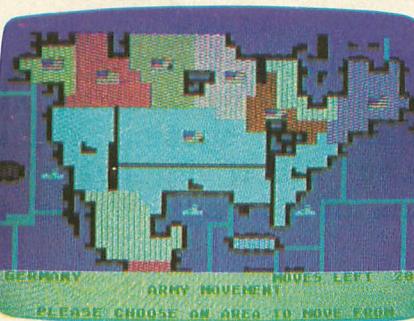


FLIGHT SIMULATOR II

Zoom your Piper Cherokee Archer around Chicago, New York, Seattle, Los Angeles or any of 80 realistic airports in this advanced flight simulation program. This sophisticated pilot training software provides believable flying practice after you learn the precise and detailed operating instructions. New this year are additional **Scenery Disks** including San Francisco and Tokyo-Osaka (\$19.95 each) and a six-disk Western U.S. set for \$99.95.

\$49.95, 48K disk. Sublogic Corporation, 713 Edgebrook Drive, Champaign, IL 61820. (217) 359-8482.

CIRCLE 187 ON READER SERVICE CARD



NAM, COLONIAL CONQUEST, BATTALION COMMANDER

Along the same lines as Conflict in Vietnam, SSI's Nam pits one player against a computer as tough as the Viet Cong and North Vietnam army units it simulates in six basic scenarios.

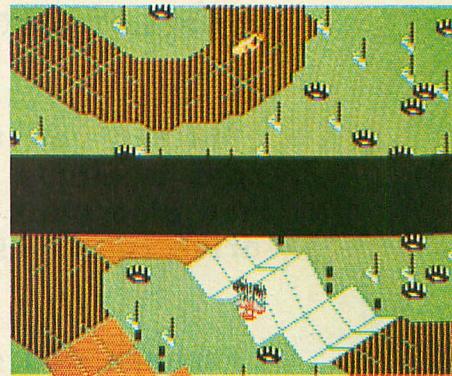
Battalion Commander, another solitaire game, lets players explore the strategy and tactics of the fictional battlefields of the 1990s and essentially design their own battle. Select a battlefield from 40 different terrain maps.

Colonial Conquest immerses as many as six players in the turbulence of the birth of the modern world. Besides being en-

tertaining, the historic scenarios provide some interesting insights into the dynamics of imperialism as it grew from the strengths and weaknesses of the major nations.

\$39.95 each, 48K disk. Strategic Simulations Inc., 1046 N. Rengstorff Avenue, Mountain View, CA 94043. (415) 964-1353.

CIRCLE 189 ON READER SERVICE CARD



RACING DESTRUCTION SET

Build your own racetracks and race nine different kinds of vehicles—even choose the gravity conditions. You'll have an endless variety of races in this digital slot-car set. Racing Destruction Set also has 50 built-in tracks, and you can save 58 tracks per disk.

\$14.95, 48K disk. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. (415) 571-7171.

CIRCLE 185 ON READER SERVICE CARD

CROSSWORD MAGIC

Designing your own crosswords can be just as challenging as solving them, and with crossword puzzles being so popular, Crossword Magic could be an income-producing tool as well as a fun challenge. Crossword Magic takes the drudgery out of trial-and-error testing of up and down word patterns—it's a word processor dedicated to the connection of words sharing one or more letters. You start with a 3-by-3 grid, which adjusts and increases in size to fit your words.

\$39.95, 48K disk. Mindscape Inc., 3444 Dundee Road, Northbrook, IL 60062. (800) 221-9884.

CIRCLE 190 ON READER SERVICE CARD

MICROLEAGUE BASEBALL

Pit the greatest teams against each other, such as the 1927 Yankees and 1975

**Astra is excited about the "NEW" Atari...
That's right, we are excited, but not just
about the new ST computers...**

**We are supporting the 8 bit Atari line
with four precision disk drives!**

The 1001 is where we start. This is where the other drive companies stop. The 1001 is a single or TRUE double density, single sided drive. It has a built in printer interface. The 1001 has a direct drive motor, not a belt driven one.

You say you need more? You are looking for a drive that is single or double density and double sided too. You also want a built in printer interface and direct drive motor with precision formatting. Then this is...

"The ONE" by Astra

Perhaps you don't need to keep 360 kbytes of data on a single disk. You prefer the utility of a dual drive system. Word processing, spreadsheets, and data bases are all made more powerful and easier to use with a dual drive system. And we have...

the "2001" by Astra

Still not enough? You want brute storage capacity! You want a single or double density, single or double sided, dual drive system. You want...

the "BIG D" by Astra

720 kbytes of storage in one system!

single drives	duel drives
Astra 1001 Single or Double density Direct drive motor Precision formatting Built-in printer interface. free ShareDOS	Astra 2001 Single or Double density Direct drive motor File and disk copies easier With two drives Put program in 1 data in 2 free TopDOS
The One by Astra Single or Double density Single or Double sided Direct drive motor Precision formatting Built-in printer interface.	Big D by Astra Single or Double density Single or Double sided Direct drive motor File and disk copies easier with two drives Put program in 1 data in 2

***ASTRA SYSTEMS, INC.**

2500 South Fairview/Unit L
Santa Ana, California 92704 **(714) 549-2141**

O.K. we are also excited about the ST line. As proof we offer...

System HD+

20 megabyte hard drive
1 megabyte 3.5" microfloppy

All in one system!

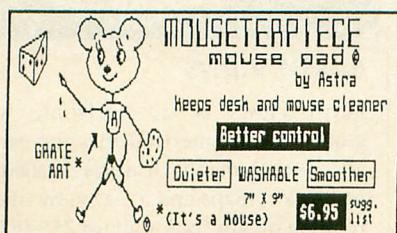
How is that for excitement?
Add this system to your 520ST or 1040ST system and enjoy the power and utility of a great computer with enough storage to tackle the job.

*Lighted front switch
Lighted busy light
Surge protected*

*Muffin fan for super cooling
5 1/2" wide * 4 1/2" high
12" long*

STOCKING STUFFERS

Yep, it's coming soon!



Centronics printer cable
for
Astra 1001 * "The ONE"
850 interface
only
ask your dealer... \$14.95

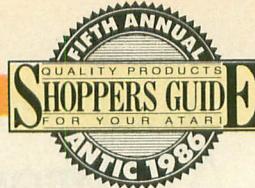
12" I/O CABLE
GREATEST THING SINCE THE PUSHUP BRA!

Chain your peripherals
without hanging the cat

Keeps desk neater

sugg. list
\$8.95

SOFTWARE



Reds—or even play them against the pitiful Washington Senators of 1955—in this baseball lover's delight. MicroLeague Baseball lets you hit-and-run, attempt squeeze plays and double steals, pitch out and make several other moves.

\$39.95, 48K disk. MicroLeague Sports Association, 2201 Drummond Plaza, Newark, DE 19711. (302) 368-9990, (800) PLAYBAL.

CIRCLE 193 ON READER SERVICE CARD

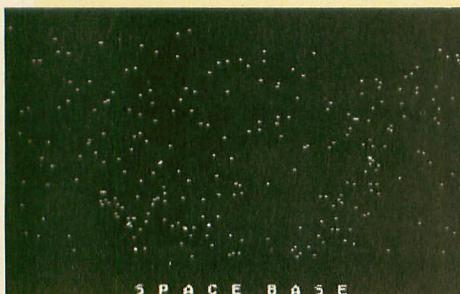
HARDBALL

This arcade-style baseball game features enticing graphics and 3-D perspective from three views. The joystick is used to choose lineups, select pitches and move fielders.

\$29.95, \$48K disk. Accolade, 20833 Stevens Creek Blvd., Cupertino, CA 95014. (408) 446-5757.

CIRCLE 194 ON READER SERVICE CARD

EDUCATION



SPACE BASE

SPACE BASE

A must if you own a telescope. This graphically stunning scrolling map and space atlas offers detailed scientific data for hundreds of the brightest stars. With its extensive documentation, the program is equivalent to a college-level introductory astronomy class.

\$19.95, 48K disk. The Catalog, AP0142.

ATARI PLANETARIUM

Look at the stars tonight—or any night between 9999 B.C. and A.D. 9999—from anywhere on Earth with Planetarium. At up to 64 times normal speed, forwards or backwards, view any celestial event, from the appearance of Halley's comet over Australia on April 5, 1986 to the earliest recorded solar eclipse.

COMMUNICATIONS

HOMEPAK

This package incorporates HomeFerm, a simple but powerful telecommunications program that accesses online services and bulletin boards; HomeFind, which stores information and instantly retrieves it; and HomeText, an easy word processor. All three programs can pass information to each other.

\$49.95, 48K disk. Batteries Included, 30 Mural Street, Richmond Hill, Ontario, L4B 1B5, Canada. (416) 881-9941.

CIRCLE 198 ON READER SERVICE CARD

BACKTALK

With Backtalk, your Atari can autodial other BBS's in the middle of the night and upload or download files in XMODEM (with or without Cyclical Redundancy

Checking), AMODEM (Atari-style Xmodem) or Xon/Xoff). 130XE owners can save money on CompuServe with Backtalk's RAMdisk support. You have total modem compatibility and you can create unlimited macro libraries.

\$19.95, 48K disk. The Catalog, AP0154.

PLATO LEARNING PHONE

This cartridge makes your Atari work like a Plato terminal. Plato is the largest educational online service in the world, devoting over 200,000 hours to languages, mathematics, sciences and more.

\$24.95, 16K cartridge. Atari Corp., 1196 Borregas Avenue, Sunnyvale, CA 94086. (408) 745-2000.

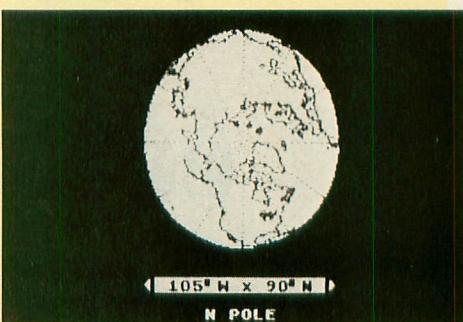
CIRCLE 182 ON READER SERVICE CARD

GRADESCAN

This user-friendly, menu-driven program helps a teacher track students, classes and grades. Among its options are Examine Averages, Examine Class Averages, Correct or Revise Records, and Print Reports.

\$24.95, 48K disk, requires BASIC. C. Robert Blum, 1722 Golden Court, Crofton, MD 21114. (301) 261-3177.

CIRCLE 197 ON READER SERVICE CARD



105° W x 90° N
N POLE

EARTH VIEWS

Earth Views is an electronic world globe—a computerized atlas and exciting adventure game that features detailed high resolution maps and a 3-D view of earth rotating on any axis. Call up 250,000 different views at the touch of a button.

\$19.95, 48K disk. The Catalog, AP0141.

BBS EXPRESS!

The newest member of the Express! family, which includes 1030, 850 and MPP Express! programs. The 1030 version of BBS Express! also runs on the new Atari XM301 modem, supporting both XMODEM and ASCII downloading. Sysops can customize bulletin board through powerful features.

BBS Express! can run using all currently available memory upgrades, and full remote sysop capabilities can be accessed from anywhere in the world.

\$39.95, 48K disk. Orion Micro Systems, 2919 Ennismore Court, Richmond, VA 23224. Specify 850 or 835/1030/XM301 version.

CIRCLE 199 ON READER SERVICE CARD

\$69.95, 48K disk. Kyan Software, 1850 Union Street, Suite 183, San Francisco, CA 94123. (415) 626-2080.

CIRCLE 201 ON READER SERVICE CARD

ADVAN BASIC

Never has a BASIC given the programmer such effortless command of the special sound and graphics capabilities of the Atari. Advan BASIC is a speedy compiled BASIC with powerful new commands and built-in Player/Missile graphics.

\$39.95, 48K disk. Advan Language Designs, P.O. Box 159, Baldwin, KS 66006. (913) 594-3420.

CIRCLE 202 ON READER SERVICE CARD

LANGUAGES & TOOLS

BASIC XE

BASIC XE from O.S.S. runs programs at least twice as fast as Atari BASIC. BASIC XE has powerful new statements, automated editing features and extra utilities. This language harnesses the full 128K memory of the 130XE computer.

\$79, cartridge plus 48K disk. Optimized Systems Software, 1221B Kentwood Avenue, San Jose, CA, 95129. (408) 446-3099.

CIRCLE 200 ON READER SERVICE CARD

PaperClip word processor. Particularly outstanding for speedy graphics and game programs.

\$79, 16K cartridge. Optimized Systems Software, 1221B Kentwood Avenue, San Jose, CA 95129. (408) 446-3099.

CIRCLE 200 ON READER SERVICE CARD

MAC/65 ASSEMBLER EDITOR

MAC/65 is the assembler for programmers who are serious about assembly language. MAC/65 is compatible with the Atari Assembler Editor, as long as you don't use MAC/65's powerful extra commands. It contains a speedy compiler and an excellent debugger.

\$79, 16K cartridge. Optimized Systems Software, 1221B Kentwood Avenue, San Jose, CA, 95129. (408) 446-3099.

CIRCLE 200 ON READER SERVICE CARD

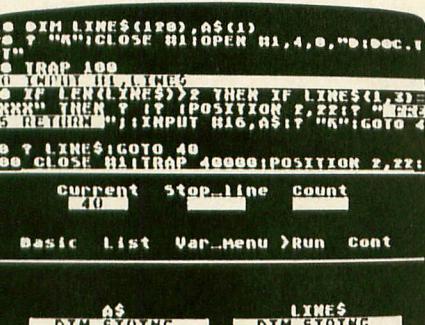
DEEP BLUE C

This C compiler code runs on other computers with only minor complications, making it one of the most transportable languages around. Faster than BASIC, Deep Blue C features pointers, recursive functions and high-level control functions. **Mathlib** (\$19.95, AP0132) is a library of math functions designed to enable your Deep Blue C Compiler to do floating-point calculations.

\$19.95. The Catalog, AP0114.

KYAN PASCAL

Kyan Pascal has all of the features of standard Pascal, the teaching and programming language widely used in colleges. Many of the Kyan Pascal programs you write on your Atari can run on the mainframe computers at your school or office. It comes with a built-in editor, native code compiler, macro assembler and a 300-page tutorial manual.



BASIC VIEW

Lighten your debugging load with Basic View, a machine language programming utility that traces BASIC programs as they run. As each line of your code is executed, the BASIC tracer highlights it in a screen window, enabling you to find bugs right away.

\$20, 48K disk. Softview Concepts, P.O. Box 1325, Lisle, IL 60532. (312) 968-0605.

CIRCLE 204 ON READER SERVICE CARD

ACTION!

Fast and powerful, ACTION! blends elements of Pascal and C, but is much easier to program on the Atari. The ACTION! screen editor makes programming a joy and was the basis of Batteries Included's

LOC	VAL	INSTRUCTION	ST	VAR	U	VAL
F306	6F		21	RAMSIZE	C8	
F307	A9		24	MEMLO	1C6C	
F308	80		80	MEMTOP	BC1F	
F309	A6	LDX BRKEY	80	SDLST	BFD8	
F30A	11	BEQ +\$F372	80	SAUMSC	BC40	
F30B	F0	BNE +\$F372	78	FX1M5C	BF60	
F30C	65	LDA CH	52	CHAC	88	
F30D	F0	LDY CH	66	CHMS	88	
F30E	F2	LDY CH	62	CHMS	88	
F30F	C9	CMP #FF	F2	COLOR1	88	
F310	FF	BEQ +\$F2FD	5E	COLOR2	88	
F311	E9	BEQ +\$F2FD	5E	COLOR4	46	
F312	F0	BEQ +\$F2FD	5E	COLORM5K	C8	
F313	E9	STX \$7C	CH	SHFLOK	48	
F314	85	STY \$7C			FF	
BK1	BKP1	BKP2	BKP3	BKP4	BKPS	TRP1
BK2	BKP1	BKP2	BKP3	BKP4	BKPS	TRP2
0000	0000	0000	0000	0000	0000	0000
PC	A	X	Y	S	NU	BDIZC
F309	80	80	81	F3	10110000	

EXTENDED D.D.T.

An outstanding assembly language debugger made better with a built-in mini-assembler, over 150 system symbols for more understandable disassembly, and the ability to deposit to graphic control areas without affecting the screen.

\$15.95. The Catalog, AP0171.

FLOATING POINT PACKAGE

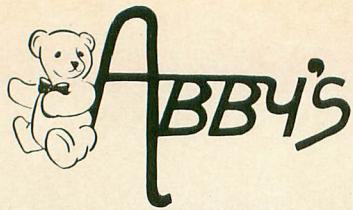
The new Floating Point Package works with the MAC/65 assembler from Optimized Systems Software. Ambitious assembly language programmers can now use the precision of floating point mathematics to create more powerful and accurate software.

\$19.95. The Catalog, AP0186.

PRINTING

GRAPHIC SHOP

Graphic Shop lets you use images from most standard Atari graphics software with



DISCOUNT SOFTWARE

— INTRODUCING —

WORLDS OF WONDER

LAZER TAG

LAZER TAG GAME KIT — Includes Star Lyte (Hand Unit), Star Belt & Star Sensor \$45.00

ACCESSORIES

Lazer Tag Star Vest \$18.00
Lazer Tag Star Sensor \$20.00
Lazer Tag Star Band \$ 9.00
Lazer Tag Star Helmet \$36.00
Lazer Tag Star Cap \$20.00

ANIMATED TALKING TOYS

Teddy Ruxpin \$65.00
Grubby \$49.00
Mother Goose \$65.00
Snoopy \$75.00
Charlie Brown \$49.00
Woodstock CALL
Poseable Miniatures as low as \$ 2.50

ACCESSORIES

Hand Puppets as low as \$12.00
Books & Tapes as low as \$ 9.75
Clothing (for talking toys) as low as \$10.50

**CALL ON THESE AND OTHER PRODUCTS
WE CARRY A COMPLETE LINE OF
SOFTWARE AND HARDWARE
INCLUDING PRINTERS**

NINTENDO

ENTERTAINMENT SYSTEM

DELUXE SET — Includes Control Deck, 2 Controllers, R.O.B. (Video Robot), Zapper (Light Gun), 2 Game Paks - Gyromite & Duck Hunt \$149.00

ACCESSORIES

R.O.B. (Video Robot) \$42.00
Zapper (Light Gun) \$24.00

GAME PAKS

Robot Series ea. \$32.00
Light Gun Series ea. \$28.00
Programmable Series ea. \$28.00
Sports Series ea. \$24.00
Action Series ea. \$24.00
Education Series ea. \$19.00
Arcade Classics ea. \$19.00

ST TOP HITS

Ballyhoo \$ 29
Black Cauldron \$ 29
Borrowed Time \$ 34
Copy II \$ 32
Computer Baseball \$ 29
Degas \$ 29
Easy Draw \$119
Financial Cookbook \$ 39
Flight Simulator \$ 29
Hacker II CALL
Hippo "C" \$ 59
Hitchhiker's Guide to the Galaxy \$ 29
Homework Helper/Math \$ 35
Jet \$ 29
Joust \$ 24
Leaderboard Golf \$ 29
Tournament Disk \$ 14
Mind Forever Voyaging \$ 35
Mind Shadow \$ 39
Music Box \$ 39
Music Studio \$ 39
N-Vision \$ 29
Pawn \$ 34
Paintworks \$ 49
P.C. Board Designer \$269
Phantasia \$ 29
Print Master \$ 29
Art Gallery I \$ 24
Art Gallery II \$ 24
Rogue \$ 25
Rubber Stamp \$ 29
Silent Service \$ 29
Starglider \$ 34
Temple of Apshai Trilogy \$ 27
Thunder \$ 29
Time Bandits \$ 29
Treasure Island \$ 29
Typesetter \$ 29
Ultima III CALL

Universe II \$ 54
VIP Professional CALL
Winnie The Pooh \$ 19
Winter Games \$ 29
World Games \$ 29

XL/XE TOP HITS

Battle of Antietam \$30.00
USAAF \$35.00
Touchdown Football \$11.95
Chessmaster 2000 \$29.00
F-15 Strike Eagle \$25.00
Music Studio \$27.00
Print Shop \$35.00
Graphic Library I, II & III ea. \$18.00
Print Shop Companion \$28.00
Temple of Apshai Trilogy \$26.00
Flight Simulator II \$39.00
Scenery Disk ea. \$16.00
Karateka \$24.00
Nam \$29.00
Koronis Rift \$26.00
Moviemaker \$39.00
Kampfgruppe \$35.00
Paperclip \$44.00
B/Graph \$29.00
Computer Quarterback \$24.00

XL/XE HARDWARE

130 XE Package \$359.95
130XE Computer, 1050 Disk Drive, 1027 Printer, 5 Pieces of Software CALL
130 XE Computer CALL
800 XL Computer CALL
1050 Disk Drive CALL
1025 Printer CALL
1020 Printer \$24.95
XM 301 Modem \$41.00
1010 Recorder \$44.00
410 Recorder \$15.00

ATARI ST HARDWARE

1040 ST CPU, Mouse & Software

520 ST CPU w/RF Modulator,

Mouse & Software

SF 354 3 1/2" SS/DD Disk Drive

SF 314 3 1/2" DS/DD

Disk Drive

SM 124 12" Mono-chrom Monitor

SC 1224 12" RGB

Color Monitor

SH 204 20MB Hard Drive



CALL FOR PRICES INDIVIDUAL ITEMS OR PACKAGES

ABBY'S CHRISTMAS SPECIALS

ATARI, INC.

Juggle's Rainbow (C) \$5.00
Juggle's House (C) \$5.00
Hangman (C) \$5.00
States & Capitals (C) \$5.00
Statistics I (C) \$5.00

SUNCOM

P.O. Party Quiz \$14.95

DATASOFT

Pooyan D/C \$5.95
Moon Shuttle D/C \$5.95

MINDSCAPE

Tinka's Mazes \$6.95
Tuk Goes to Town \$6.95
Tonk in Land of Buddy Bots \$6.95
Tink's Adventure \$6.95

RIBBONS

Atari 1025 (Black) \$ 2.50
Atari 1025 (Color) \$ 3.50
Atari 1027 Ink Rollers \$ 5.00
Panasonic 1091 \$ 8.50
Okimate 10 (Color) \$ 6.00
Star Gemini Black \$ 2.50
Star Gemini Color \$ 3.50
Atari 1020 Pens (Black) \$ 2.50
Atari 1020 Pens (Color) \$ 3.00

DUST COVERS

520 ST Computer \$7.00
SF 354 Disk Drive \$7.00
SF 314 Disk Drive \$7.00
Mouse House \$5.50
Mouse Mat \$7.50
130 XE Computer \$7.00
1050 Disk Drive \$7.00
1025 Printer \$7.00
1027 Printer \$7.00
800 XL Computer \$7.00

PRINTERS

STAR - NX-10 \$239.00
EPSON - FX-85 \$399.00
PANASONIC - 1091 \$259.00

**ALL TITLES ON DISK UNLESS MARKED (R) FOR ROM CARTRIDGE
WE CHECK FOR STOLEN VISA & MASTERCARD**

Order Line

1-800-282-0333

**ORDERS ONLY! Sales Personnel Do
Not Have Information on
Previous Orders or Product Specs.**

**SOFTWARE ONLY — Prepaid orders over \$50 receive free shipping via UPS in continental U.S. Please add \$2 orders under \$50. HARDWARE and all
orders requiring shipment via U.S. Post Office are subject to additional freight charges. Add \$5 for COD orders. VISA/MasterCard orders add \$2 service
charge. Ohio residents add 5.5% sales tax. Personal checks require a three-week waiting period. No waiting when paid by credit card, certified check
or money order. All items subject to availability and price change. PLEASE CITE AD NUMBER WHEN ORDERING. ALL RETURNS MUST BE ACCOM-
PANIED BY AN AUTHORIZATION NUMBER.**

**Customer Service
& Ohio Residents**

1-513-879-9699

AD #AT-126

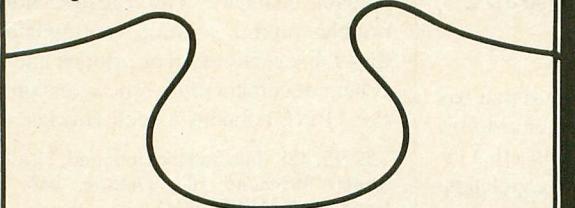


Don't be Puzzled

REGENT BASE:

A Relational GEM Database

Solve your business and personal needs with our easy to use database. Regent Base makes full use of the GEM system so using any of the available templates is as easy as dragging the Mouse and pressing a few keys. Included with Regent Base are two templates: A Mailing List Manager and A Checkbook Manager. Other templates available include: Accounts Receivable, Payables, General Ledger, Customer Billing, and Invoicing. Many other templates are also available. Regent Base supports over fifteen printers and even "mail-merges" with Regent Word II.



REGENT WORD II:

GEM Word Processor with Spelling Checker

Power through any word processing needs with Regent Word II. Regent Word II makes full use of the GEM system, so editing is powerful and easy! As text is typed Regent Word II reformats the document on the screen to show exactly what will be printed. Bold, Superscripted, Subscripted, Italic and Underlined text are displayed while editing. A 30,000 word Spelling Checker is built in. Insert or delete words — up to 100,000 — in Regent Word II's spelling dictionary with the click of a mouse button! Regent Word II "mail-merges" with Regent Base for instant form letters. Online Help Menus and over fifteen printer drivers are built in.

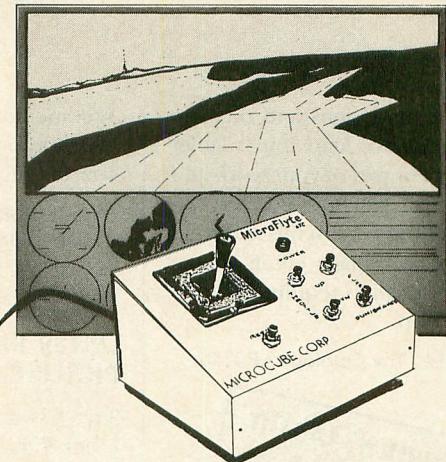
The Perfect Match for the Atari ST

Regent

REGENT SOFTWARE
7131 Owensmouth, Suite 45A
Canoga Park, CA 91303
(818) 882-2800

CIRCLE 056 ON READER SERVICE CARD

A REVOLUTION IN FLYING



THE MicroFlyte JOYSTICK

A unique product designed for use with FLIGHT SIMULATOR II™ to give you accurate and proportional control. Includes control Yoke, Throttle, Flaps, Brakes, Gun and Elevator trim.

OTHER FEATURES:

- Software program drivers for other Flight programs available soon
- Use with User generated BASIC programs
- Use with User generated assembly language programs

This is the ONLY fully proportional, continuously variable joystick control for Flight Simulator II. Now your home computer can be a truly realistic flight simulator.

"...I flew all over the map with one landing after another and no mishaps." K.C.

"...I am getting more use out of Flight Simulator now and will continue thanks to your joystick" R.T.

WARNING: Use of the MicroFlyte joystick may cause Flight Simulator addiction. Order with caution.

NOW AVAILABLE DIRECT FROM MICROCUBE

ONLY \$59.95 + \$4.00 shipping & handling
(VA residents add 4% sales tax)

Payment enclosed check money order

Bill my MasterCard Visa Choice

Card # Expires

Signature

Name

Address

City State Zip

Computer Model

MICROCUBE CORPORATION
P.O. BOX 488
LEESBURG, VA 22075

(703) 777-7157

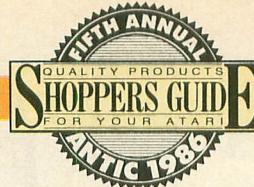
M-F 9 A.M.-6 P.M. est.

DEALER INQUIRIES WELCOME

Flight Simulator II is a trademark of Sublogic Corp.

CIRCLE 045 ON READER SERVICE CARD

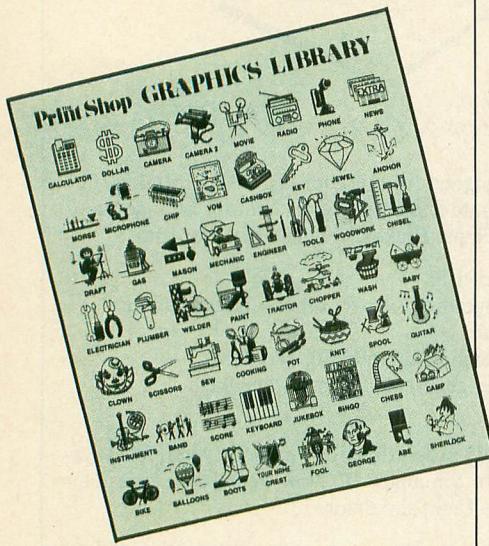
SOFTWARE



WORD PROCESSING

Print Shop. Create designs and pictures with your KoalaPad or Atari Touch Tablet and compress all or part of your work into Print Shop format. The Print Preview feature lets you choose pattern fills and solid black or white to replace colors in the printout. Graphic Shop requires Broderbund's Print Shop.

\$19.95, 48K disk. The Catalog, AP0156.



PRINT SHOP

Design your own greeting cards, banners, letterheads, logos and more with Broderbund's versatile Print Shop (\$49.95). You don't need computer graphics experience: Print Shop will guide you through the process. Design elements include eight typestyles, nine border designs, a graphics editor that lets you create original pictures, and the ability to superimpose text over any design.

Volumes I, II & III of the **Print Shop Library** (\$24.95 each) are collections of graphics, ranging from presidents to plumber's helpers, from chess pieces to choppers. These illustrations feed right into Print Shop.

The new **Print Shop Companion** (\$49.95, 64K disk) adds calendars, enhanced borders, fonts and fill-in patterns to the basic program.

48K disk. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903. (415) 479-1170.

CIRCLE 205 ON READER SERVICE CARD

PRINT WIZ

This printer dump mixes text and graphics for hard copies from most popular printers and can print sideways on a page. Print

Wiz includes special handlers for popular graphics programs and can change type size directly from your keyboard.

\$29.95, 16K disk. Allen Macroware, P.O. Box 2205, Redondo Beach, CA 90278. (213) 376-4105.

CIRCLE 206 ON READER SERVICE CARD

LISTER PLUS,
PICTURE PLUS

Stretch your dot-matrix printer to its limits. Lister Plus dumps listed files (including programs) to the printer using any custom character set you choose. Picture Plus manipulates most types of picture files, so you can save them in standard files for use with a BASIC program, or dump them to the printer in any of four sizes.

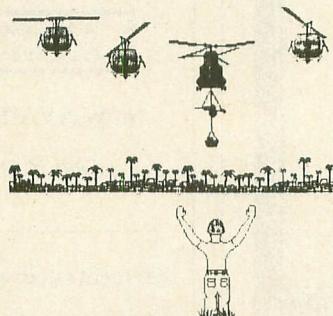
\$19.95, 48K disk. The Catalog, AP0179.

MEGAFONT II+

MegaFont II+ is a lister program that has won many friends during its four years on the market. It speedily prints files that include graphics or Atari special characters. Megafont is compatible with popular paint programs and supports printers compatible with Epson, C. Itoh and Gemini 10X.

\$25.95, 48K. XLEnt Software, P.O. Box 5228, Springfield, VA 22150. (703) 644-8881.

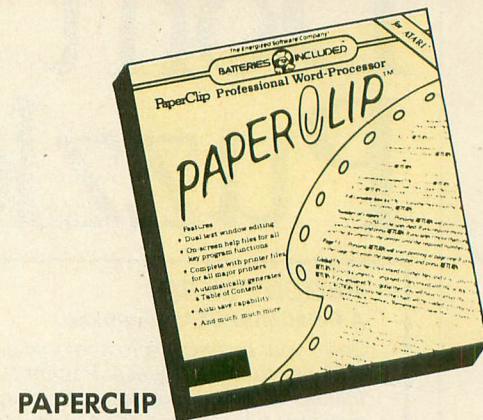
CIRCLE 220 ON READER SERVICE CARD

TYPESETTER (\$34.95),
PAGE DESIGNER (\$29.95),
RUBBER STAMP (29.95)

These three related programs form into a flexible and powerful package which lets you mix graphics and text elements that you have created from scratch. This software goes beyond Print Shop and Newsroom in control of the printed page. The array of powerful choices means that you have a lot of commands to learn.

XLEnt Software, P.O. Box 5228, Springfield, VA 22150. (703) 644-8881.

CIRCLE 207 ON READER SERVICE CARD



PAPERCLIP

We write and edit every word at **Antic** with PaperClip before transmitting the copy to our typesetter via modem. PaperClip is a professional-strength word processor that's easy to learn. Its features include a split screen with cut-and-paste between both windows, one-key macros, readable characters with true descenders, double-column printing, configuration files for several different printers and excellent documentation. A new version for the 130XE contains a spell checker.

\$59.95, 48K disk. Batteries Included, 30 Mural Street, Richmond Hill, Ontario, L4B 1B5 Canada. (416) 881-9941.

CIRCLE 198 ON READER SERVICE CARD

ATARIWRITER +

A disk-based upgrade of the popular AtariWriter cartridge, AtariWriter+ now includes a spelling checker and mail merge, as well as allowing 130XE owners to take full advantage of their computers' full 128K memory. AtariWriter+ lets you send your file to devices other than "P:"—for instance, you might want to send it to the modem port or to another Atari computer.

\$49.95, 48K disk. Atari Corp., 1196 Borregas Avenue, Sunnyvale, CA 94086. (408) 745-2000.

CIRCLE 183 ON READER SERVICE CARD

FIRST XLENT WORD PROCESSOR

First XLEnt Word Processor is powerful and feature-packed, but beginners can easily learn its basic functions and produce impressive results. The six most useful commands are always available at the bottom of the screen as icons, accessible via joystick or the keyboard. A simple printer driver maker construction set assures full control of your paper.

\$29.95, 48K. XLEnt Software, P.O. Box 5228, Springfield, VA 22150. (703) 644-8881.

CIRCLE 220 ON READER SERVICE CARD

SOFTWARE

PRODUCTIVITY

**FIFTH ANNUAL
QUALITY PRODUCTS
SHOPPERS GUIDE
FOR YOUR ATARI
ANTIC 1986**

INSYST!

Insyst! is aimed at the small businessman who needs a complete inventory tracking system. The program is written in compiled ACTION! for speed, but you do not need the ACTION! cartridge. The program allows—even encourages—the use of two drives. The manual is well-written and easy to understand. Includes an Edit/Add screen and Reports and Disk menus. Insyst! supports the 130XE RAMdisk.

\$79.95, 48K disk. SoSoft Software, 2513E Sylvester Road, Albany, GA 31705. (912) 888-0821.

CIRCLE 213 ON READER SERVICE CARD

BUSINESS MANAGER

This is for the small businessman who needs a simple accounting system to track sales and inventory without getting lost in bells and whistles. Written in Atari BASIC, The Business Manager also runs with BASIC XL from OSS. This program takes advantage of the extra RAM in a 130XE.

\$49.95, 48K Disk. Reeve Software, 29W150 Old Farm Lane, Warrenville, IL 60555. (312) 393-2317.

CIRCLE 214 ON READER SERVICE CARD

INVENTORY MASTER

This business inventory package allows 1,700 items per disk and has five-second retrieval, multiple vendor history and five standard reports. Up to 12-digit part numbers are supported. Purchase orders and product invoice reports automatically update the records.

\$89.95, 48K disk. Royal Software, 2160 W. 11th Avenue, Eugene, OR 97402. (503) 683-5361.

CIRCLE 215 ON READER SERVICE CARD

ELITE PERSONAL ACCOUNTANT

This personal finance package handles 79 categories divided into income, expense, asset and liability groups, and contains 17 different transaction codes. Its extensive HELP facilities are easily accessed without disturbing work in progress, and you can use three drives for data disks.

\$48.95, 48K disk. Elite Software, 14897 Interurban Avenue S., #60, Seattle, WA 98168. (206) 246-5122.

CIRCLE 208 ON READER SERVICE CARD

1986		Personal Projections	
1	Command Menu	Worksheet Commands	198.00 \$1.00
2	Range	Global Format	00 \$2.50
3	Formulas	zero-suppression	00
4	Column	Exit	00
5	Format	Sheet	00
6	Column	Delete	00
7	Format	Insert	00
8	Column	Save	00
9	Format	Load	00
10	Split	Print	00
11	Re-Call	Change	00
12	Disk	Format	00
13	Print	Clear Sheet	00
14	May	050.00 \$2.50	00
15	June	2300.00 \$2.50	00
16	July	2255.00 \$2.50	00
17	August	486.00 \$2.50	00
18	September	427.00 \$355.00	00
19	October		00
20	November		00

CALC MAGIC

This spreadsheet is a complete package, featuring programmable macros enabling you to run automated sequences, the ability to quickly test multiple "what-if" conditions, pop-up menu windows and several math functions, including mean, standard deviation and variance. Standard spreadsheet .DIF files are supported.

\$24.95, XL or XE and disk. The Catalog, AP0177.

MICROMOD

This software defies categorization. It's not just a record-keeping program, but it does the job well. It's not a real inventory program, but it can be with extra modules available from version 3.0. Its power lies in the record-design function providing a package which can be used to track most or all of a small business' records.

\$79.95, six 48K disks. Micromiser Inc., 1635-A Holden Avenue, Orlando, FL 32809. (305) 857-6014.

CIRCLE 212 ON READER SERVICE CARD

B/GRAPH

B/Graph creates pie charts, 2-D and 3-D bar charts, line and area graphs. You can graph three factors with 100 data points each and convert instantly between graph types without re-entering data. B/Graph also reads and writes to VisiCalc .DIF files—enter data with VisiCalc, then graph it with B/Graph.

\$39.95, 48K disk. Batteries Included, 30 Mural Street, Richmond Hill, Ontario L4B 1B5, Canada. (416) 881-9941.

CIRCLE 198 ON READER SERVICE CARD

MILES PAYROLL SYSTEM

This advanced, comprehensive payroll accounting system maintains cumulative totals for up to 50 employees per disk and features complete reporting, check writing and W-2 reporting. Covers all standard

payroll deductions, unemployment insurance and worker's compensation. Easy to update for yearly IRS changes, the Miles package allows weekly, biweekly, semi-monthly or monthly pay periods.

\$99.95, 32K disk, requires two disk drives. Miles Computing, 21018 Osborne Street, Building 5, Canoga Park, CA 91304. (818) 341-1411

CIRCLE 218 ON READER SERVICE CARD

MUSIC

MUSIC STUDIO

This easy-to-use music composer will have you playing songs on your Atari within minutes. The Music Studio has five screens from which to compose, edit and play music back. Up to three lines of lyrics can be added to scroll right along with your musical score. Other features include transposition, inserting, copying and moving blocks of music—much like working with word processors. You have a choice of 15 instruments, ranging from flute to drums.

\$34.95. Activision Inc., P.O. Box 7287, Mountain View, CA 94039. (415) 960-0410.

CIRCLE 216 ON READER SERVICE CARD

MUSIC PAINTER

With Music Painter, you can play three different voices at a time. Colored lines placed on a musical staff with your joystick represent notes. You can play the music forward or backward, insert or delete spaces, and copy blocks of music anywhere within the song.

\$19.95, 48K disk. Atari Corp., 1196 Borregas Avenue, Sunnyvale, CA 94086. (408) 745-2000.

CIRCLE 182 ON READER SERVICE CARD

MIDIMATE

The MIDIMATE series of hardware and software from Hybrid Arts are professional MIDI sequencers that can control a bank of synthesizers. The MidiTrack II uses your Atari to emulate a 16-track digital recorder with synchronizer and MIDI remote control. There's 16-track overdubbing, auto-locate and optimizing.

MIDIMATE Interface Box: \$199.50; MidiTrack II Software, \$149.50. Hybrid Arts, 11928 W. Olympic Blvd., Los Angeles, CA 90064. (213) 826-3777.

CIRCLE 217 ON READER SERVICE CARD



SAVE

SUPER VALUES COMPUTER DIRECT

SALE

SINGLE SIDED/DOUBLE DENSITY DISKS

.29 ea.

100% Certified 5 1/4" floppy disks. Lifetime Warranty, automatic lint cleaning liner included. 1 Box of 100 \$29.00 List \$1.99 ea. **SALE \$.29 ea.**

ATARI WRITER WORD PROCESSOR SALE \$ 49.95

List \$99

Write papers, reports, schoolwork, etc. quickly and efficiently with the No. 1 Atari word processor with spelling checker. Make changes with preview modes. Features included: full screen editing, double column printing, page nos., headers-footters, centering, condensed, elongated, margin setting, underling search and replace and much more. (Disk) List \$99.00 **SALE \$49.95**

JOYSTICK SALE SALE \$ 16.95

List \$24.95

This Pro 5000 has been rated No. 1 in joysticks. It fits all Atari machines and is Arcade Quality. List \$24.95 **SALE \$16.95**

FLIP—N—FILE SALE \$ 14.95

List \$24.95

Everyone needs a floppy disk secretary. Dust and dirt can hurt your disks. Proper filing and protection of you disk collection will reduce unnecessary wear and tear. Flip-N-File holds over 70 disks in one easy to find, protective filer. List \$24.95 **SALE \$14.95**

SOFTWARE

ACCESS

ACTION PACK (D).....\$14.95
LEADER BOARD (D).....\$24.95

ACCOLADE

FIGHT NIGHT (D).....\$18.95
HARDBALL (D).....\$18.95

ACTIVISION

ON TRACK RACING (D).....\$15.95
STAR LEAGUE BASEBALL (D).....\$15.95
SPACE SHUTTLE (D).....\$15.95
HACKER (D).....\$15.95
MIND SHADOW (D).....\$15.95
MASTER OF THE LAMPS (D).....\$15.95
GREAT AMERICAN CROSS COUNTRY RACE (D).....\$15.95
GHOSTBUSTERS (D).....\$19.95

BATTERIES INCLUDED

HOME PACK (D).....\$19.95
PAPER CLIP (D).....\$29.95

BRODERBUND

PRINT SHOP (D).....\$25.95
PRINT SHOP COMPANION (D).....\$22.95
GRAPHICS LIB. 1, 2 or 3 (D).....\$15.95
KARATEKA (D).....\$18.95

COSMI

CAVERNS OF KHAFKA (D).....\$12.95
TALLADEGA (D).....\$12.95
BEYOND FORBIDDEN FOREST (D).....\$12.95
MASTERS OF TIME (D).....\$12.95
AZTEC CHALLENGE (D).....\$4.95
E FACTOR (D).....\$4.95
CRYPTS OF PLUMBOS (D).....\$4.95
SPIDER INVASION (T).....\$4.95

DATA SOFT

MR. DO (D).....\$9.95
PAC-MAN (D).....\$9.95
DIG DUG (D).....\$9.95
POLE POSITION (D).....\$9.95
CONAN (D).....\$9.95
NEVER ENDING STORY (D).....\$18.95
MERCENARY (D).....\$18.95
221 B BAKER STREET (D).....\$18.95

ELECTRONIC ARTS

ONE ON ONE (D).....\$9.95
PINBALL CONSTRUCTION (D).....\$9.95
MUSIC CONSTRUCTION (D).....\$9.95
RACING DESTRUCTION (D).....\$9.95
AGE OF ADVENTURE (D).....\$9.95
SUPER BOULDERDASH (D).....\$9.95
SEVEN CITIES OF GOLD (D).....\$9.95
M.U.L.E. (D).....\$9.95
GOLDEN OLDIES (D).....\$19.95
MOVIE MAKER (D).....\$22.95
OGRE (D).....\$26.95
CHESSMASTER (D).....\$26.95
LORDS OF CONQUEST (D).....\$22.95

EPYX

PITSTOP II (D).....\$8.95
DRAGONRIDERS OF PERN (D).....\$9.95
BALL BLAZER (D).....\$12.95
RESCUE ON FRACTULUS (D).....\$12.95
THE EIDOLON (D).....\$12.95
JUMPMAN (D).....\$14.95
WORLD KARATE CHAMP (D).....\$18.95
SUMMER OLYMPIC GAMES (D).....\$22.95

GAMESTAR

ON TRACK RACING (D).....\$15.95
STAR LEAGUE BASEBALL (D).....\$15.95
STAR BOWL FOOTBALL (D).....\$15.95

HAYDEN

SARGON II (D).....\$9.95
SAT VERBAL MODULE (D).....\$14.95
SAT MATH MODULE (D).....\$14.95
SAT PRACTICE TEST (D).....\$14.95

HI—TECH EXPRESSIONS

CARD WARE (D).....\$7.95
HEART WARE (D).....\$7.95
PARTY WARE (D).....\$9.95
WARE WITH ALL KIT (D).....\$9.95
JINGLE DISK (D).....\$9.95
HOLIDAY PRINT PAPER (D).....\$7.95

INFOCOM

MOONMIST (D).....\$24.95
BALLYHOO (D).....\$24.95
HITCHHIKER'S GUIDE TO THE GALAXY (D).....\$22.95
WISHBRINGER (D).....\$22.95

S.S.I.

BATTLE OF ANTIETAM (D).....\$32.95
GETTYSBURG (D).....\$34.95
MECH BRIGADE (D).....\$34.95
NAM (D).....\$23.95
U.S.A.A.F. (D).....\$34.95
KAMPFGRUPPE (D).....\$34.95
SIX GUN SHOOTOUT (D).....\$23.95
CARRIER FORCE (D).....\$23.95
FIELD OF FIRE (D).....\$23.95
IMPERIUM GALATUM (D).....\$23.95
BROADSIDES (D).....\$23.95
COMPUTER QUARTERBACK (D).....\$23.95
COMPUTER BASEBALL (D).....\$23.95
COLONIAL CONQUEST (D).....\$23.95
COMPUTER AMBUSH (D).....\$32.95

XLENT

TYPESETTER (D).....\$21.95
RUBBER STAMP (D).....\$18.95
PAGE DESIGNER (D).....\$18.95
P.S. INTERFACE (D).....\$18.95
1ST XLENT WORD PROCESSOR (D).....\$18.95
MEGAFONT (D).....\$16.95

PEACHTREE

GENERAL LEDGER (D).....\$37.95
ACCOUNTS RECEIVABLE (D).....\$37.95
ACCOUNTS PAYABLE (D).....\$37.95

AMERICAN EDUCATIONAL COMPUTER

BIOLOGY FACTS (D).....\$9.95
ELEMENTARY SCIENCE FACTS (D).....\$9.95
U.S. GEOGRAPHY FACTS (D).....\$9.95
U.S. GOVERNMENT FACTS (D).....\$9.95
U.S. HISTORY FACTS (D).....\$9.95
WORLD GEOGRAPHY FACTS (D).....\$9.95
WORLD HISTORY FACTS (D).....\$9.95
FRENCH VOCABULARY SKILLS (D).....\$9.95
SPANISH VOCABULARY SKILLS (D).....\$9.95
AEC SPELLING (D).....\$19.95
LEARN TO READ (D).....\$19.95
READING COMPREHENSION (D).....\$19.95

DESIGNWARE

SPELLAKAZAM (D).....\$9.95
TRAP-A-ZOID (D).....\$9.95
SPELLAGRAPH (D).....\$9.95
MATH MAZE (D).....\$14.95
CRYPTO CUBE (D).....\$12.95
SPELLICOPTER (D).....\$14.95
MISSION ALGEBRA (D).....\$24.95
BLUE CHIP TYCOON (D).....\$14.95
BLUE CHIP MILLIONAIRE (D).....\$14.95

FISHER PRICE

LINKING LOGIC (C).....\$9.95
DANCE FANTASY (C).....\$9.95
MEMORY MANOR (C).....\$9.95
LOGIC LEVELS (C).....\$9.95

BUY 1 GET 1 FREE

MINDSCAPE

BANK STREET WRITER (D).....\$25.95
CROSSWORD MAGIC (D).....\$29.95
THE HALLEY PROJECT (D).....\$22.95

BUY 1 GET 1 FREE

SPINNAKER

DELTA DRAWING (C).....\$9.95
FACE MAKER (C).....\$9.95
KIDS ON KEYS (C).....\$9.95
DELTA DRAWING (C).....\$9.95

SYNAPSE

MINDWHEEL (D).....\$19.95
ESSEX (D).....\$19.95
SYNCALC (D).....\$29.95
SYNCALC TEMPLATES (D).....\$14.95

WEEKLY READER

PICTURE BUILDER (D).....\$14.95
STICKYBEAR BOP (D).....\$14.95
STICKYBEAR NUMBERS (D).....\$14.95
STICKYBEAR BASKET BOUNCE (D).....\$14.95
STICKYBEAR OPPOSITES (D).....\$14.95
STICKYBEAR ABC (D).....\$14.95
STICKYBEAR SHAPES (D).....\$14.95

BEST SERVICE IN THE

U.S.A. • 90 DAY

REPLACEMENT

WARRANTY • ONE DAY

EXPRESS MAIL • 15 DAY

FREE TRIAL • OVER 500

PROGRAMS • A CUSTOMER

LIST OF OVER 3,000,000

LARGEST IN THE U.S.A.

**CALL FOR FREE
CATALOG WITH \$2.00
OFF COUPON!**

PHONE ORDERS

8 a.m. - 8 p.m. C.S.T. Weekdays

9 a.m. - 12 noon C.S.T. Saturdays

(312) 382-5050

COMPUTER DIRECT WARRANTY

All Computer Direct's products carry a minimum 90 day warranty. If anything fails within 90 days from the date of purchase, simply send your product to us via United Parcel Service prepaid. We will IMMEDIATELY send you a replacement at no charge via United Parcel Service prepaid. This warranty proves that **We Love Our Customers.**

Add \$3.00 for shipping, handling, and insurance. Illinois residents please add 6 1/2% sales tax. Add \$6.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. All orders must be in U.S. Dollars. WE DO NOT EXPORT TO OTHER COUNTRIES EXCEPT CANADA. Enclose Cashier Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail. Prices & Availability subject to change without notice. Hardware shipping prices vary according to weight. Please call for amount. (No APO-FPO for monitors)

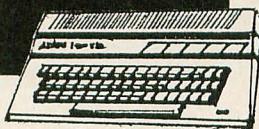
VISA—MASTER CARD—C.O.D.

C.O.D. on phone orders only.

SALE

SUPER DEALS

(312) 382-5050 TO ORDER

SAVE

ATARI 130XE 152K COMPUTER

SALE \$134.95 List \$249

This 128K Ram, 24K Rom computer has a redesigned keyboard for easier use. Features 256 colors, 4 special function keys, and more. List \$249.00 **SALE \$134.95**

1050 DISK DRIVE WITH 127K

SALE \$159.95 List \$299

You can instantly store and retrieve information and programs 5 times faster than the Commodore 1541. Contains its own microprocessor and ROM. DOS 2.5 included. List \$299.00 **SALE \$159.95**

BIG BLUE PRINTER

SALE \$39.95 List \$199

This is the affordable printer you have been waiting for! This 8 1/2" letter size, 80 column dot matrix, heat transfer printer features upper and lower case, underline, graphics, word processing, and much more. List \$199.00 **SALE \$39.95**

PREMIUM QUALITY 150-170 CPS COMSTAR AERO 160 PRINTER

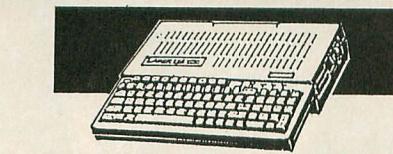
SALE \$199.00 List \$499

The Comstar Aero 160 gives you a 10" carriage, 150-170 CPS, 9x9 dot matrix with double strike capability for 18x18 dot matrix (*near letter quality), high resolution bit image (120x144 dot matrix), underline, back spacing, left and right margin setting, true lower descenders with super and subscripts, prints standard, block graphics and special characters. It gives you print quality and features found on printers costing twice as much! (Centronics Parallel Interface) List \$499.00 **SALE \$199.00** (*with Xetec interface)

PRINTER/TYPEWRITER COMBINATION

SALE \$199.95 List \$299

Superb letter quality daisy wheel printer/typewriter combination, just a flick of the switch to interchange. Extra large carriage, typewriter keyboard, automatic margin control, compact, lightweight, drop in cassette ribbon! (90 day warranty) Centronics Parallel Interface is built in. List \$299.00 **SALE \$199.95**



APPLE® COMPATIBLE SYSTEM SALE

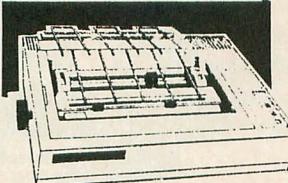
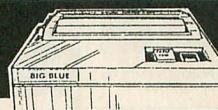
SALE \$499.00 List \$1227

Marvelous! Save over \$700! Included are: Laser 128 Computer, Big Blue Printer, 9" Samsung Green Monitor, Interface, Magic Window IIe Word Processor, Magiccalc Spreadsheet, Magic Memory Data Base and 2 Paper Rolls. List \$1227.85 **SALE \$499.00**

ATARI SYSTEM SALE

SALE \$299.00 List \$361

Here are the fantastic items you'll receive: Atari 130XE, Atari 1050 Drive, Big Blue Printer, Atari Interface, and 2 Rolls of Paper. Save over \$60 off the sale prices! List \$361.75 **SALE \$299.00**



COMSTAR 1000 PRINTER

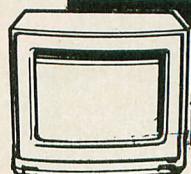
SALE \$199.95 List \$349

This is the best values today. Print letters, documents, etc. at 100 characters per second or 20 cps in Near Letter quality mode. Features are dot addressable graphics, adjustable tractor and friction feed, margin settings, pica, elite, condensed, italics, super & subscript, underline, bold, and double strike. Centronics interface included. (please specify atari) List \$349.00 **SALE \$179.95**

12" 80 COLUMN MONITOR

SALE \$79.95 List \$129

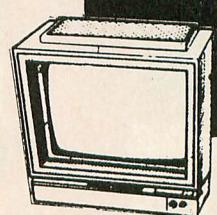
Super High Resolution green screen monitor. 80 columns x 24 lines, easy to read, plus speaker for audio sound included. Fantastic value. (cable \$9.95) List \$129.00 **SALE \$79.95**



13" COLOR MONITOR

SALE \$139.95 List \$329

This premium quality monitor comes with speaker and audio hook up, High Resolution, clear screen, 40 columns x 24 lines, front panel controls and more. Can also be used with VCR. One year warranty. (cable \$9.95) List \$329.00 **SALE \$139.95**



14" RGB & COMPOSITE COLOR MONITOR

SALE \$239.95 List \$399

Must be used to get 80 columns in color with 80 column computers (C128 - IBM - Apple) (RGB cable \$19.95) Add \$14.50 shipping. List \$399.00 **SALE \$239.95**

TV TUNER

SALE \$49.95 List \$130

This tuner has dual UHF/VHF selector switches, mute, automatic fine tuning and computer/TV selector switches. Hook it up between your computer and monitor! Inputs included for 300 ohm, 75 ohm, and UHF. List \$129.95 **SALE \$49.95**

**CALL BEFORE YOU ORDER:
OUR PRICES MAY BE LOWER
& AND WE OFFER SPECIAL
SYSTEM DEALS •**

**ATTENTION
COMPUTER CLUBS • DEALERS
We offer big volume discounts!
CALL TODAY**

COMPUTER DIRECT

We Love Our Customers

22292 N. Pepper Rd., Barrington, Illinois 60010

(312) 382-5050 to order

Antic

The ATARI® Resource

A 1900 baud modem! New! Atari Teen Contest

LECOMPUTERS '85!

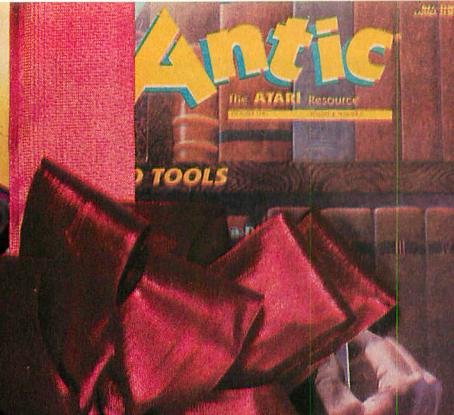
Autopilot SPRINT & MELI
Atari 1050 Modem Commands
Construction Set! Review
Call! What's in it for You?

DE 5 Major
Type-in Programs

Antic

The ATARI® Resource

TOOLS



Antic

The ATARI® Resource

Now including
The ST Resource

JULY 1985

VOLUME 4 NUMBER 1

Summer Computing

Atari Classes & Camps

Practical Type-in:
Business decision maker

Weather forecaster

Recipe converter

200 year

Calculator

ST Monitor

Reviews:
Zork II

Comments

Anticstick Programming Gallery

ST reviews: Personal Pascal

Antic

The ATARI® Resource

Now including
The ST Resource

JULY 1985

VOLUME 4 NUMBER 2

FOURTH ANNIVERSARY ISSUE

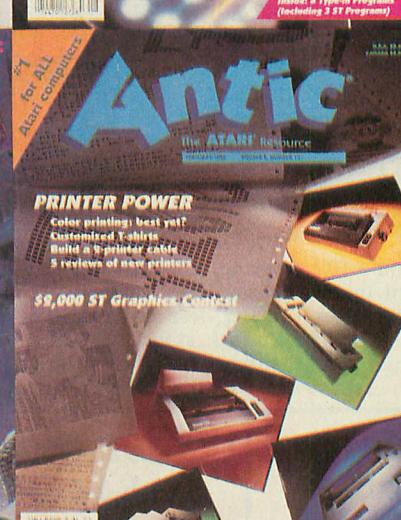
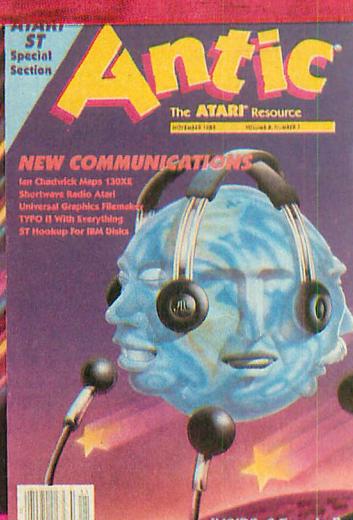
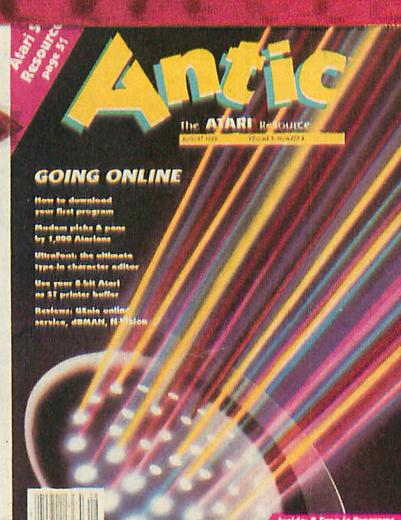
- Graphics on your daisy wheel printer
- Garden Planner
- Chemistry Calculator

Anticstick Programming Gallery

ST reviews: Personal Pascal

First ANTIC Award

For Atari 400/800



12

GIFTS TO GIVE YOUR FAVORITE ATARI USERS

This year, shop the easy way. No need to stand in line! You will save time, energy and money—and give pleasure every month when you give subscriptions to Antic, the #1 Atari Magazine.

Just order the first subscription (or renewal) at the regular rate and

then save almost 30% on all the others. (Come to think of it, now's the time to give yourself the Action Edition with disk. You deserve it! No more tedious typing—just load and go!)

We will send a hand-addressed card announcing your gift in plenty of time

for the Holidays. What could be easier?

And, since it's the Season, we have a gift for you when you order: The Best of Antic, an anthology of the best games, articles and programs from earlier Antics.

Uncle Henry's Nuclear Waste Dump

Be careful with those toxic cans

"I hope you've got insurance," says Uncle Henry as you don your yellow rubber suit. Dump the nuclear waste and make that old cuss rich. Be very careful and you may live through it. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.



That falling can of nuclear waste may land safely this time, but don't count on safe landings for long. Better get used to bombastic explosions.

Uncle Henry is always trying to make a fast buck, so when he discovered that thousands of corporations desperately needed a place to dispose of their nuclear waste, he started thinking. When Uncle Henry starts thinking, something bizarre usually follows.

And it did! After six months of brainstorming, Uncle Henry celebrated the grand opening of his Nuclear Waste Dump. Hidden behind the local Sloppy Joe Hut, the waste dump was designed to handle vast quantities of discarded radioactive material.

Soon Uncle Henry was rolling in dough, but there was too much waste for one man to handle. So he put an ad in the local paper—which of course you answered.

DUMPING IT

Your first task is to type in Listing 1, NUCWASTE.BAS, checking each line with TYPO II. If you have trouble typing the special characters in lines 9040, 9050 and 9085, don't type them in. Listing 2 will create those lines for you, and store them in a file called LINES.LST. SAVE a copy, plug a joystick into port 1 and RUN the program. When the title screen appears, press [SELECT] to choose your speed—1 for easy, 5 for hard. Then press either [START] or the fire button to begin.

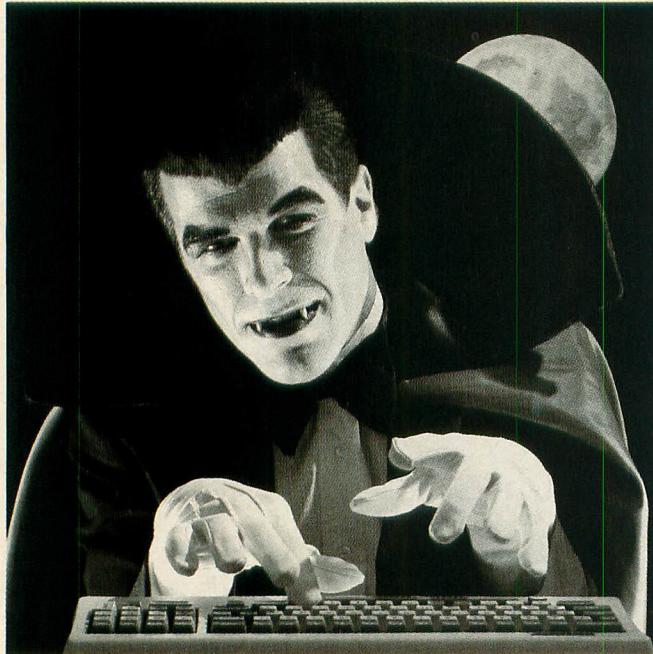
The Nuclear Waste Dump employs the most advanced method of waste disposal known to man—dumping the stuff in a pit. You stand on the edge of the pit. Uncle Henry hands you a container of nuclear waste, which you maneuver above the pit with the joystick. Press the button to drop it. The can falls into the pit and bounces along the pile of waste until it comes to rest. Simple, right? Well, almost...

There are three types of waste containers, each having its own distinct shape and color. The catch is that a container may not end up on or next to a container of the same type. If it does, POW—the end of your little corner of the world!

Momentary contact between containers of similar waste is allowed. For example, a container of Type 1 waste

continued on page 53

"Computing at night bit into my budget..."



\$10.00+ per hour

Most online information networks can drain your resources faster than you can say "Vampire." Not with GENie, the General Electric Network for Information Exchange. As part of the world's largest commercially available teleprocessing network of General Electric Information Services Company, GENie won't bite into your budget.

**Evenings, weekends, holidays.
Just \$5 per hour.**

With GENie, you can make friends, schedule meetings, gather facts and figures, set up travel reservations, get the news, be entertained, even shop for a fraction of what other information services charge.

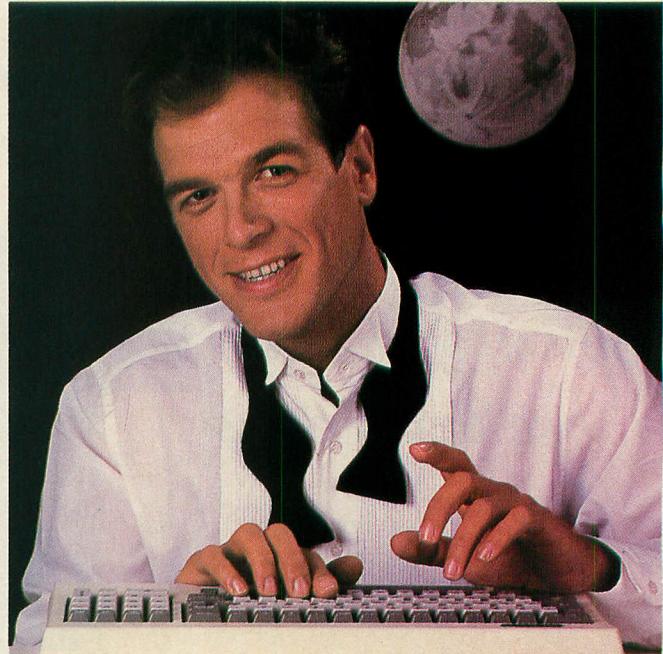
And you get a lot more for your money.

With GENie's Atari[†] **RoundTable**TM **Special Interest Group** you can discuss the latest in Atari products and accessories; download hundreds of public domain software programs, and participate in exciting and informative online conferences. And, uploads are FREE on GENie!

There's more!

Meet friends old and new with GENie's **LiveWire**TM CB simulator or exchange messages with **electronic mail** service. Schedule a trip with the **online travel service**. Fun and learning for the whole family with **Grolier's** electronic encyclopedia.

"With GENie I get more bytes online for less."



\$5 per hour

Play multiplayer and classic games in GENie's **Game Room**. Get the latest in domestic and international **computing news**. All this and there's more to come. New services are being added each and every month!

Only \$18 to register! Save up to 60%!

Check out the chart. Compare the savings for yourself. You'll find GENie delivers all of your favorite services for an incomparable price, at incomparable savings.

Compare & Save	Services							Pricing		
	Travel & Shopping	SIGS/User Groups	Electronic Mail	CB Simulator	News	Games	Registration Fee	Monthly Minimum	300 baud	1200 baud
The Source	X	X	X	no	X	X	\$49.95	\$10.00	\$8.40	\$10.80
CompuServe	X	X	X	X	X	X	\$39.95	none	\$6.00	\$12.50
GENie*	X	X	X	X	X	X	\$18.00	none	\$5.00	\$5.00

*Rates and Services shown in effect 6/86. Non-prime time applies Mon.-Fri., 6pm-8am local time, all day Sat., Sun., and nat'l holidays. Subject to service availability. Additional surcharge applies for 2400 baud service.

With services and savings like these, now you can get more bytes online without incurring blood-curdling costs. Get online with GENie. Sign up today!

Sign up from your keyboard today.

4 Easy Steps:

1. Have your Visa, MasterCard or checking account number ready.
2. Set your modem for local echo (half duplex)—300 or 1200 baud.
3. Dial **1-800-638-8369**. When connected, enter HHH
4. At the U# prompt enter **XJM11939,GENie** then RETURN.

Need help or more information? No modem yet? We can help. Call **1-800-638-9636**.

† Atari is a registered trademark of Atari Corporation.

CIRCLE 032 ON READER SERVICE CARD

GENieTM

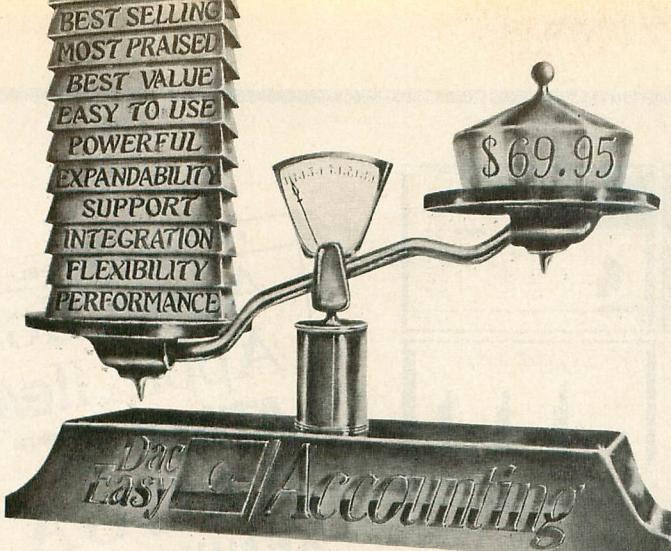
Stay online longer, for less.



INFORMATION SERVICES

General Electric Information Services Company, USA

GENie rates and services subject to change. Uploads are free during non-prime hours at 300 or 1200 baud. Third-party services offered on GENie may include additional charges.



Perfect Balance

Now the scales are in your favor. Dac-Easy Accounting gives you the best price plus tremendous performance. That means value, and the experts agree. Dac-Easy Accounting was recognized by *InfoWorld* as 1985's overall "BEST SOFTWARE VALUE."

No other accounting package can match the explosive user base or the unanimous acclaim from industry experts. Dac is the perfect choice for your first accounting system or for upgrading from a single module system. Either way compare, and you will join over 150,000 people who have computerized with Dac-Easy.

PERFORMANCE

Accurate information when you need it is what performance is all about. Fast, flexible reports give you what you need to know to manage cash-flow, turn inventory and increase profits . . . Listen to the skeptics-turned-believers.

"Dac-Easy Accounting is so inexpensive . . . we were skeptical . . . We expected to find a program that couldn't compete on a feature-by-feature basis . . . We were wrong."

InfoWorld, 1985

EXPANDABILITY

You never have to worry about outgrowing the Dac-Easy Series which offers Atari software products, support, and ten different business forms. All of our products are top performers offered at amazing prices.

Dac-Easy Payroll is designed to solve all your personnel and payroll management problems, outperforming systems costing thousands more. And it can either stand alone or integrate perfectly with Dac-Easy Accounting to form a comprehensive business management program.

Also available are Dac-Easy Forms and Fast Forms which offer the finest selection in continuous, multi-part forms and checks.

FLEXIBILITY

Dac offers the rare ability to handle either service or product-oriented companies without sacrificing features.

"Dac-Easy Accounting is everything its designers say it is . . . It is also flexible enough to fulfill the accounting needs of almost any type of business."

Journal of Financial Computing, 1985

FEATURES

General Ledger

- Unlimited multi-level accounts with screen inquiry for three years
- Pencil and pen correction option
- Automatic budgeting by department
- Unlimited journals and departments
- Excellent audit trail and flexible financial statements

Accounts Receivable

- Open invoice or balance forward per customer for unlimited number of customers
- Multi-sorted mailing labels
- Statements and invoices support automatic finance charges and special comments
- Detailed history for three years for number of invoices, sales, cost, and profits
- Customized aging report
- Automatic sales forecasting

Accounts Payable

- Checks handle multiple invoices, unlimited allocations and cash available protection
- Multi-sorted vendor labels and directories
- Customized aging report
- Automatic forecasting of purchases

Inventory

- Average, last purchase, and standard costing
- Physical inventory with perpetual comparisons
- Accepts fractional measure such as dozens
- Automatic forecasting of product needs
- Automatic forecast of product sales
- Detailed three-year history for every product
- Automatic pricing, alert and activity reports
- Screen inquiry for on-hand/on-order/sales/cost/profit/turns/GRO/etc.

Purchase Order

- Inventory and non-inventory items
- Allows up to 99 lines
- Per line discount in %
- Accepts generic deductions
- Accepts back orders and returns
- Purchase journal

Billing

- Service or Inventory invoicing on plain or pre-printed forms with remarks
- Prints sales journal
- Allows return credit memo

Forecasting

- Unique program that automatically forecasts using your three-year history:
- Revenue and expense accounts
- Vendor purchases
- Customer sales, cost and profit
- Inventory item usage
- Four different forecasting methods

OVER 80 ROUTINES AND 300 REPORTS

INTEGRATION

Dac-Easy's seven modules work together perfectly. Enter data once and it's posted to the other modules automatically. Also, most modules can be used stand-alone.

ALSO AVAILABLE FOR IBM & APPLE II

Dac-Easy Accounting is also available for the Apple II series. On the IBM compatible machines we have seven software products including Dac-Easy Accounting, Dac-Easy Payroll, Dac-Easy Word II, Dac-Easy Mate, Dac-Easy Port, Dac-Easy Accounting Tutor, and Dac-Easy Payroll Tutor.

SUPPORT

Subscribe to our toll free support agreement and join the best support program in the industry. Our friendly 12 person support staff are trained to answer your accounting and technical questions. No excuses, and no delays.

Find out for yourself why Dac-Easy is the fastest selling accounting package in history. Call us today!

Minimum hardware requirements

Atari 520 ST or 1040 ST, one double-sided disk drive, 132 column printer in compressed mode. The Atari 520 ST must have the upgraded memory or the TOS in ROM chips installed in the system.

Dac-Easy C/Accounting™



Now Available for the Atari ST Series

TO ORDER
CALL TOLL FREE
1-800-992-7779
Ask for Operator #456
IN TEXAS CALL
1-214-458-0038
or mail the order form below.

Mail to:
dac software, inc.

4801 Spring Valley Rd
 Bldg. 110-B
 Dallas, TX 75244

Yes, please rush me the following Dac products:

Product	Qty.	Price	Total
Dac-Easy Accounting	—	69.95	—
Dac-Easy Payroll	—	49.95	—
Add Shipping Charge			7.50
Texas Residents			
Add Sales Tax (6 1/8%)			—
TOTAL			

Check Money Order

AMEX VISA MASTERCARD

Account # _____

Expires _____

Signature _____

Name _____

Company _____

Address _____

City _____

St. _____ Zip _____

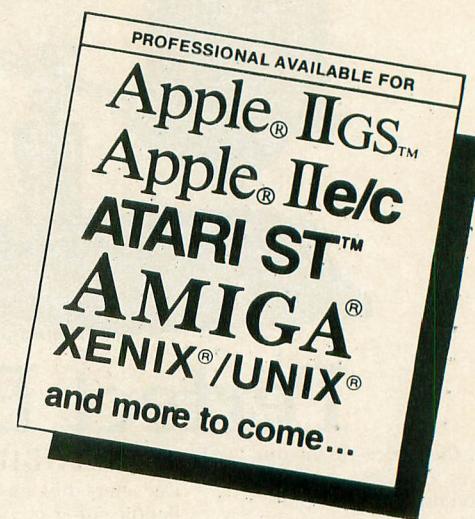
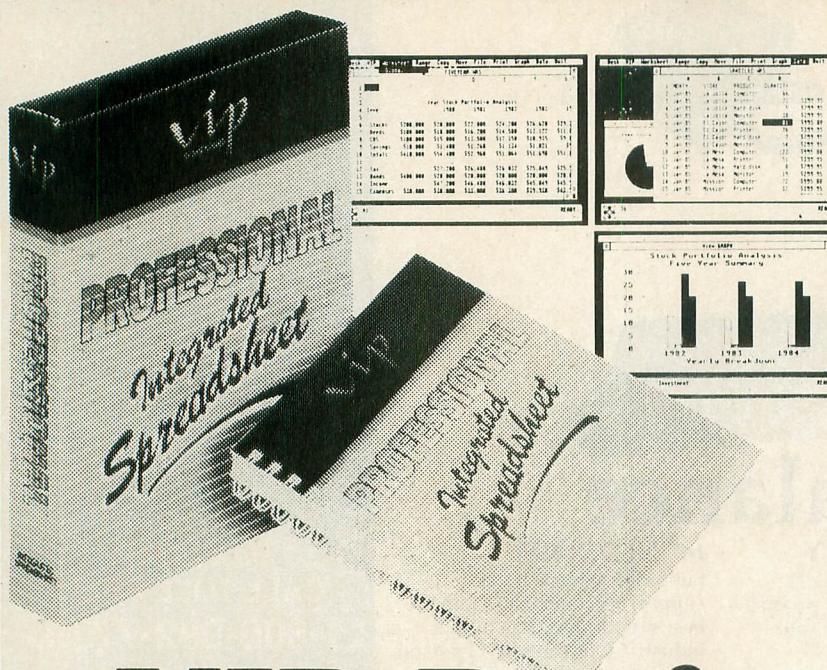
Phone _____

Type of Business _____

No. of Employees _____

30 Day Money-Back Guarantee

Dac Software offers an unconditional guarantee on all Dac-Easy products (less shipping charges). There is a \$10 restocking fee if the disk seal is broken. This guarantee is available on all products bought directly from Dac Software.



VIP Professional

The New Generation Spreadsheet Spreadsheet, Database, Graphics and Macros With Total Lotus 1-2-3™ Functionality

VIP Professional Professional was modeled after the powerful, best-selling Lotus 1-2-3. It not only has the same commands and features, you can also type the same keys to do the same things. It can also read and write Lotus files and run all Lotus macros. So you have immediate access to thousands of worksheet models, hundreds of macro applications, tens of books, scores of training courses, stacks of user groups, and bulletin board services to help you make the most of Professional, and share data with the rest of the business world.

Mouse Interface You may elect to use the keyboard for all commands, but Professional also provides a full-featured mouse interface with Icons, Dialogue Boxes, Pull-down Menus, Mouse Ranging, and Scroll Bars. This makes command selection, movement in a sheet, range selection, splitscreen use and a score of other functions much more intuitive and easy to use. What were once complex commands with Lotus are now only a mouse-click away.

1. Spreadsheet Nothing is left out of this giant 256 column by 8192 row spreadsheet. You get variable column width, split screens, frozen titles, sorting, file combine and extract, copy, move, range naming, local and global cell protection, total printer control, and over 50 special functions to make worksheet creation a snap. And Professional supports up to four megabytes of memory – when you need real power!

2. Database Professional includes a powerful data manager to help you arrange, store and analyze information about your home or business. It allows up to 8192 records, with up to 256 fields, and has commands for sorting, data queries and statistical analysis.

3. Graphics With Professional's presentation graphics you can give shape to your figures with five different types of graphs – pie chart, bar, stacked-bar, line and XY graphs. With the many options available you can decorate your graph just about any way you wish. You can also print presentation-quality graphs with different fonts, sizes – and colors too!

Macros Professional features macros for automating repetitive tasks. Macros also allow you to program Professional for doing your accounting, inventory control, even school work.

Just Minutes to Learn Professional comes with a user-sensitive handbook for the newcomer. And help is built right into the program. With the handy tutorial you will be able to create your first worksheets in just minutes.

* Features may differ on different versions. Contact your dealer for further details.

* SCO Professional UNIX/XENIX Multiuser systems contact Santa Cruz Operation (800) 626-UNIX / (408) 425-7222

VIP Professional is a trademark of VIP Technologies Corp. Lotus and 1-2-3 are registered trademarks of Lotus Development Corporation. Atari ST is a trademark of Atari Corp. Apple and Apple IIe/c and Apple II GS are registered trademarks of Apple Computer Inc. Amiga is a registered trademark of Commodore Amiga Inc. UNIX is a registered trademark of AT&T. XENIX is a registered trademark of Microsoft Corporation. SCO Professional is a trademark of Santa Cruz Operations Inc.

Copyright © 1986 VIP Technologies Corp.
Specifications and availability subject to change without notice.

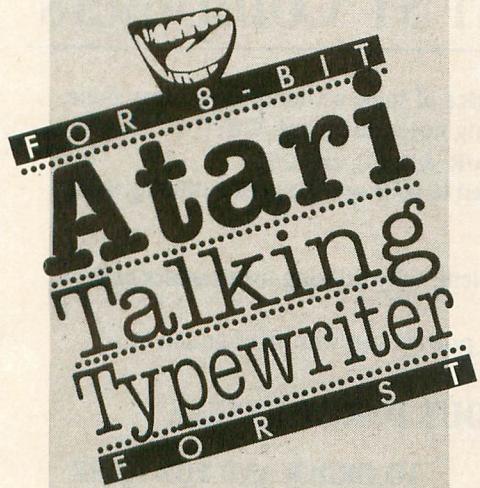
FOR MORE INFORMATION CALL
1-416-479-1880
U.S. ORDERS SHIPPED FROM U.S.

CIRCLE 035 ON READER SERVICE CARD

ISD MARKETING INC.

20 Steelcase Road, Unit 12
Markham, Ontario, Canada L3R 1B3

Next Month in January



Plus:

- **Door Prize Selector**
- **Math Educational Game With optional speech modules**

J.D. Casten's Newest Hit Game!!

ST Super Star Trek

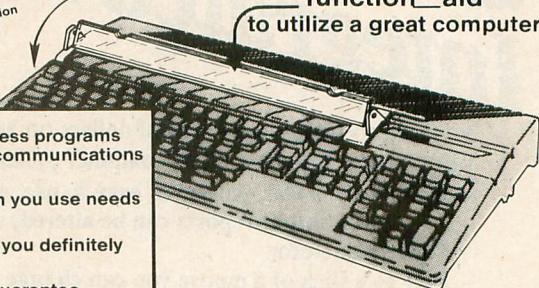
You need . . . "function_aid"

- Stop fumbling for your manuals
- Put your Macros in front of you
- Rests on top of your *ST
- Adjust window to suit your light
- When finished, remove & cover keys
- 4 Blank inserts included (2" x 12")
- Designed & made only for the *ST

*ST is a trademark of Atari Corporation

\$19.95
Plus Shipping

"function_aid"
to utilize a great computer



- ★ Indispensable for business programs (word processors, telecommunications and data bases) etc.
- ★ Just about any program you use needs function_aid
- ★ If you own an Atari *ST you definitely need this!
- ★ Unconditional 5 year Guarantee
If you break function_aid, return it and we will replace it at no charge to you.

(Allow Three Weeks Delivery)
VISA • MASTER CARD • MONEY ORDER
Add \$1.75 each for Shipping Costs

STATIC ENGINEERING, INC.
P.O. Box 570, Bristol, Connecticut 06010

Phone Open (12 p.m. - 9 p.m. Eastern)
(203) 879-4671

CIRCLE 064 ON READER SERVICE CARD

THE ATARI TEN COMMANDMENTS

I

**"We shall create a computer
that will be a landmark in the
history of computers."** *Jack Tramiel*
ATARI CORP.

Recently, a writer compared the revolutionary 1040ST™ to Henry Ford's Model T.™

You may be surprised to learn that we were very complimented.

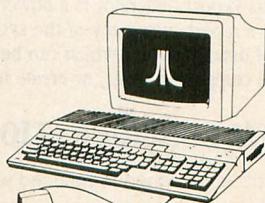
The truth is that both the ST™ and the Model T were designed to be machines of great power and usefulness at a price that was affordable to everybody.

The only difference is that the 16-bit 1040ST uses the most advanced technology in the world. And the result is a computer that has 1024 Kbytes of memory for the amazingly affordable price

of \$999. That's actually less than \$1 per Kilobyte.

We think Henry Ford would be very proud.

The ATARI 1040ST is at your computer retailer now.



ATARI

© 1986, Atari Corp.
ATARI, 1040ST, and ST are TM's or reg. TM's of Atari Corp.
Model T is a TM of Ford Motor Company.

CIRCLE 008 ON READER SERVICE CARD

STAccounts™ Integrated Accounting Package

For Atari ST Computers

No more spending thousands of dollars on an accounting package! For the price of some accounting packages alone, you can now purchase a full computer system that will satisfy your accounting needs and more. WHY!?

- STAccounts is fast, powerful, easy to use, and affordable. Fully integrated A/R, A/P, I/C, and G/L.
- All printed output/reports can be altered, amended, or entirely reconfigured to your specific needs utilizing the Report Generator.
- Easy as a click of a mouse you can change from one module to another.
- STAccounts is written totally within Digital Research "GEM" operating system, fully utilising the Graphics and Mouse capabilities of the Atari ST Personal Computer.

The combination of the STAccounts and the Atari ST Personal Computer will provide you with the solution to all your needs at an affordable price.

VISIT YOUR ATARI DEALER TODAY AND FIND OUT FOR YOURSELF.

PARTIAL LIST OF FEATURES

Accounts Receivable (A/R) - Integrated with A/P, G/L & I/C.

* Account numbers and/or names * Customers' names and addresses * Invoicing/statements * Credit limit * 10 tax rates * Immediate account access * Backorders. REPORTS include Sales Turnover, Aged Receivables, Customer Statements and much more.

Accounts Payable (A/P) - Integrated with A/R, G/L and I/C.

* Account numbers and/or names * Suppliers' names & addresses * Remittance advices/statements * Immediate account access * Credit limits. REPORTS include Purchase Turnover, Aged Payables, an Supplier Mailing List.

Inventory Control (I/C) - Integrated with A/R, A/P and G/L.

* 10 product groups * Turnover by quantity and value * Alpha supported item lists * Inventory linked to A/P * Editing of invoice information. REPORTS include Inventory Turnover, Price Lists, Inventory Re-order list, and Stock Report.

General Ledger (G/L) - Integrated with A/R, A/P, and I/C.

* 256 G/L Accounts * Immediate account access * Account details including budgets * Variance percentages for budget against actuals. G/L REPORTS include Profit and Loss Statement, Trial Balance, Balance Sheet and statement of accounts.

Help

STAccount provides you with on screen help through the use of TEDDY, a screen icon. If you become uncertain of your actions during the course of running the program, just click the left mouse button on TEDDY and a help screen for that particular section of the system will appear.

Report Generator

STAccounts Report Generator is a powerful tool integrated into the system. It will allow you to reconfigure reports using any of the system information. Provided with the system are a number of default reports which can be altered, amended, or entirely reconfigured for your individual company's needs, or create new reports as to your company requirements.

SYSTEM CONFIGURATION

STAccounts is designed to be used with either a 520 ST or 1040 ST, 0.5 or 1.0 megabyte drive with monochrome or colour monitor.

STAccounts and TEDDY are trademarks of Silicon Chip Limited.

Atari ST is a trademark of Atari Corporation. Gem is a trademark of Digital Research.

In Europe, STAccounts is available from Silicon Chip Ltd, 82 London Rd., Kingston, Surrey, England.

Fax # 01-541-5398, Telephone 01-549-6657

**TO ORDER AND FOR MORE
INFORMATION CALL**

1-416-479-1880

U.S. ORDERS SHIPPED FROM U.S.

NON U.S. ORDERS SHIPPED FROM CANADA

ISD MARKETING INC.

20 Steelcase Road, Unit 12
Markham, Ontario, Canada L3R 1B3

Send in this coupon with your credit card number, money order or check for U.S. \$249.95.
In Ontario add 7% sales tax.

No C.O.D.

CHECK MONEY ORDER
 AMEX VISA MASTERCARD Expires

Account No. _____

Name _____

Company Name _____

Address _____

City _____ State _____ Zip _____

Phone _____

Signature _____

30 Day Money Back Guarantee: VIP MARKETING provides a 30 day money back guarantee that all claims and features listed in this ad are true.

STAccounts™

Begin your Holidays

with a free gift* from Abacus

Simply fill out the attached coupon and return it to one of our participating dealers for your **free** ST BASIC Reference Card (Retail value \$2.95). And while you're there, take a look at our complete line of top-notch software. No purchase necessary.

* available at participating dealers



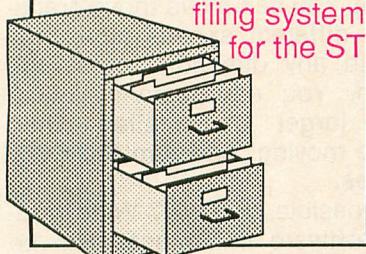
Atari ST BASIC Reference Card



Convenient reference card lists all the ST BASIC commands with their syntax and explanations. Great to keep handy near your ST.

DataTrieve

The electronic filing system for the ST



high-speed operation. **DataTrieve** also has a fast search and sort capabilities, handles records 64,000 characters long, accesses 4 files simultaneously, index up to 20 fields per file and has complete report capabilities.

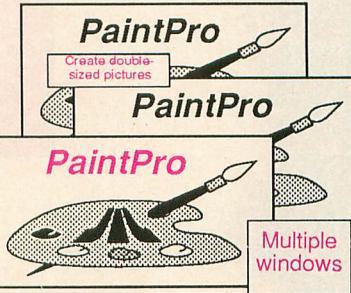
\$49.95

DataTrieve is a simple to use but flexible data manager. Drop-down menus allow you to quickly define your file and enter your information through screen templates.

DataTrieve has many unique features: store data items in different type styles; create subsets of a file; change file definition and format; includes and supports a RAM disk for

PaintPro

Create double-sized pictures



PaintPro

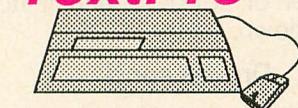
Multiple windows

PaintPro is a friendly, yet powerful design and painting package for drawing graphic and artistic pictures. This GEM-based package supports up to **three** active windows—cut & paste from one window to another. Complete toolkit of functions: free-form sketching, lines, ellipses, boxes, fill, copy, move, zoom, undo, help and extensive text

capabilities. Import "foreign" pictures for enhancement using double-sized picture format and send hardcopy to dot-matrix printers. **PaintPro** works with either monochrome or color systems.

\$49.95

TextPro



Word processor for the ST

"Outstanding wordprocessing program . . . for the novice and professional" *ST World* [Oct. '86]. **TextPro** features full-screen editing by mouse or keyboard, multi-column output, automatic index and table-of-contents generation, sideways printing (to Epson printers), 30 user definable function keys, mode for editing C source programs and

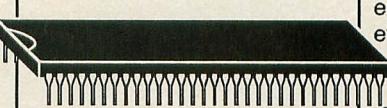
flexible printer driver installation. It is designed with fast entry of text in mind. Advanced **TextPro** users can substitute shortcut keyboard commands for drop-down menu commands.

\$49.95

Other software and books also available. Call or write for your **free catalog** or the name of your nearest dealer. Or order directly using your credit card. Add \$4.00 per order for shipping. Foreign orders add \$10.00 per item. 30-day money-back guarantee on software. Dealers inquires welcome—over 1500 dealers nationwide.

AssemPro

The complete 68000 assembler development package for the ST



AssemPro is the professional developer's package for programming in 68000 assembly language on the ST. The package includes: editor, two-pass interactive assembler and error editing (direct or separate with an error file), and GEM parameter information, monitor-debugger, disassembler and 68020 single-step simulator. Selective assembly from memory to memory or from file to file, large GEM and TOS libraries, macros, local and redefinable variables, 32-bit arithmetic, online help showing addressing types and GEM/TOS functions.

\$59.95

Atari ST and ST BASIC are trademarks of Atari Corp.

GOOD FOR ONE ATARI REFERENCE CARD

One per customer. Good only while supplies last. This offer ends January 31, 1987.

Name _____

Address _____

City _____

State _____

Zip _____

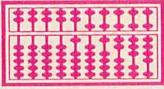
Have you ever purchased Abacus products before? _____

Dealer _____

GOOD FOR ONE ATARI REFERENCE CARD

NC

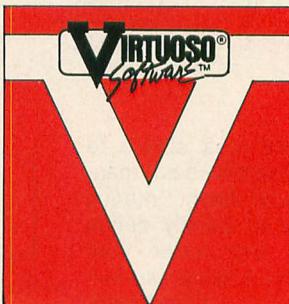
Abacus



P.O. Box 7219 Dept.AC Grand Rapids, MI 49510
Phone 616/241-5510 • Telex 709-101 • Fax 616/241-5021

The Next Revolution

Quick, imagine your own personal music video. Take a song and add a story line. Picture a game with music. Now draw it! Play it! Store it! Change it! Print it! Phone it! Suddenly you and your computer are soaring. You've got the touch of genius. With **Virtuoso® Software.™**



And now take it from the top! Go all the way with your **Commodore 64®** or **128™**, or **Atari® 800XL™** or **130XE™** computer. Like this:

First, create **full-color graphics**—line drawings of anything—using a keyboard, joystick, Koala Pad™ or mouse. You can move those graphics at different speeds along any path in any direction across the screen. You can instantly make them larger or smaller—while they're moving. **And turn them 360 degrees.**

Impossible, you say? With Virtuoso Software flat images **can** be turned full circle. **In real time.**

Next, **put music in motion.** Through the graphics you draw and the movements you choose for them, you **simultaneously** produce and control music.

The same actions and movements that create and change your graphics **also** control the music so you can change melody line, make it louder or softer, speed it up or slow it down.

Draw a song.

Express your music in colors, forms and images, producing a unique no-

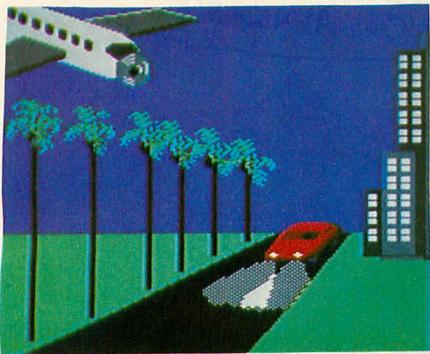
VIRTUOSO® is a registered trademark of Virtusonic Corporation. Commodore® 64™ and Commodore 128™ are registered trademarks of Commodore Electronics Limited. Atari® 800XL™ and 130XE™ are trademarks of the Atari® Corporation.

in Fun Power is Here!

tation system that is itself an original graphic.

Let's keep rolling. With Virtuoso Software you can also **generate text**—letters, words, copy—change their size and move them around exactly the same way as graphics.

Think you've seen it all? You can split the screen into **multiple windows** for processing text and graphics. You can run words, song lyrics, or a complete story in one or more



Draw an adventure in the tropics. Make the plane dive, spin the propeller, pull up and away. Bend the palms. Simultaneously, make the red coupe speed toward you, growing larger as it zooms into the night. With music!

windows while your graphics continue to appear in other windows.

There's more to astound you. Everything produced by the Virtuoso Software System—graphics, music, text—can be **printed out** or sent to other Virtuoso Software owners by phone (**modem**), using the **built-in** protocol. And, you can **interact** with their games or shows.

Best of all, the Virtuoso Software System is so easy to use that there is **NO** conventional user's manual or complicated documentation. Instead, instructions and choices are offered by **menu screens**, using simple action words and icons, not codes. You make choices and you can even check out examples to demonstrate or clarify your choices. Nice work.

The price? An incredibly low **\$49.95** per disk. Plus, Virtuoso Software includes a **pre-set library** of graphics, musical compositions and game formats that appear on the screen at the press of a key. Press on.

Free Bonus: CompuServe \$15 Starter Set

Order now and your Virtuoso Software will include the CompuServe INTRO-PAK™, a starter set that gives you instant access to CompuServe plus \$15 credit. It's **FREE** if you hurry.

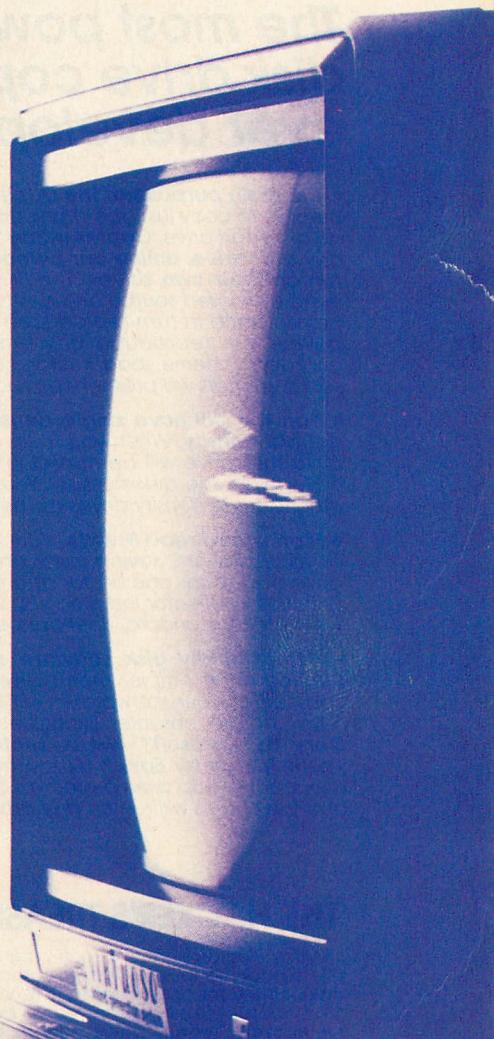
**CALL
TOLL-FREE
TO ORDER NOW!
1-800-528-6060
ASK FOR EXTENSION 105**

CIRCLE 071 ON READER SERVICE CARD

4 Ways to Order

Use the coupon, phone us, shop CompuServe's The Electronic Mall™, or ask your dealer. But don't wait. **We ship November 10. Get the touch of genius now. What a gift!**

212-316-6744 in New York City
1-800-528-6060 ask for ext. 105



To: Virtusonic Corporation 123 Duke Ellington Boulevard New York, NY 10025	Check one: <input type="checkbox"/> Atari <input type="checkbox"/> Commodore
Yes , send me _____ Virtuoso Software disks at \$49.95 each for a total of _____. New York State residents add sales tax. <input type="checkbox"/> Check Enclosed <input type="checkbox"/> VISA <input type="checkbox"/> MasterCharge	
Card # _____	Exp. Date _____
Ship to: (Name) _____	
Address _____	
City/State/Zip _____	
Signature _____	

Atari BACK-UP!

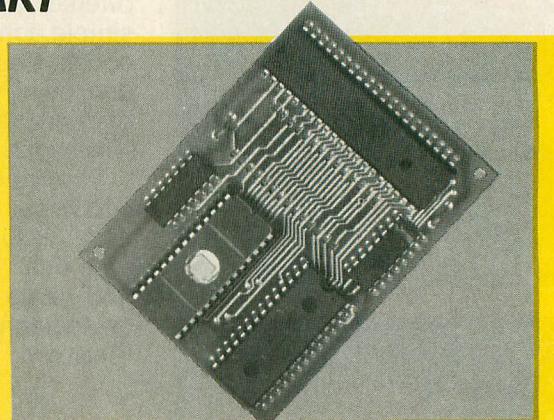
We specialize in Atari®
Hardware & Software copy systems.

THE 1050 DUPLICATOR™

**The most powerful
disk drive copy system
ever developed for the ATARI™**

- The main purpose of the Duplicator is to copy disks! You will be able to copy just about any disk! The copies you make will run on any Atari drive. Copies made with the Duplicator will run on any disk drive, unlike our competition whose copies will only run on their own drives. The Duplicator is fully automatic. You need only insert source and destination disks. Custom formats will be read and in turn reproduced on the backup copy disk. Our device will reproduce any custom format or heavily copy guarded scheme, bad sectors, double sectors, 19 through 24 sector formats will present no problem to the Duplicator.
- You will still have single density, density and one half, and double density. When you have a Duplicator installed in a 1050 drive that drive will be turned into true double density. You will have twice the disk storage. Your drive will be compatible with other double density drives as The Rana Indus. Percom, etc.
- High speed read & write. Your disk drive will read and load all of your software, saving wear and tear on your drive. The 1050 drive now reads one sector at a time. This is slow and inefficient. With the Duplicator installed you will read eighteen sectors in the time it takes standard, unenhanced drives to read one.

- User friendly disk software will be included with every Duplicator. A simple, menu driven program will allow you to copy all of your software. It will back-up many new programs never before possible. Example: Goonies and Never Ending Story by Datasoft™ (weak sector), Hardball by Accolade™, Apshi Trilogy by Epyx™ (Fuzzy Track 39). Yes, the Duplicator is now backing-up disks protected by the WEAK and FUZZY sectors and the copies will run on any drive and computer.



* Duplicator price may increase due to component shortage and price increases.

Only **\$149.95**

Plus \$3.50 for Shipping & Handling Add 7% Outside U.S.A.

* N.Y. State Residents add 7½% Sales Tax

Dealer inquiries are welcome, call for quantity price quote.

- EASY 5-MINUTE INSTALLATION
- Fully Compatible with XL and New XE Series.

THE HACKER'S TREASURE CHEST ON Disk

18 Utility Programs on disk. Each program is specifically designed to aid you in backing-up your software collection. You will be able to duplicate disks, cartridges and cassettes. Any one program is worth the price of all 18. It has taken us over one year to put together this fine collection on the Hacker's Treasure Chest disk. Some of the programs you will receive are: Cartridge Copy, Bootape Maker, Tape to Disk, Sector Copy, The Unprotector, Sector Disassembler, Bad Sector Finder, Modem Program... plus more. All of these programs plus 10 more on this disk. You will also receive a menu that will run basic and binary files just by typing the number of the program. Any file on any disk will load automatically from this menu. ALL FOR ONLY

\$34.95

Plus \$3.50 Shipping
Add 7% Outside U.S.A.

DENSITY "DOUBLER" 1050 DOUBLE THE POWER... TRIPLE THE SPEED...

Get TRUE double density, full compatibility with any DOS. Now store twice as much data on each disk. Read and write up to 3X faster in single or double density (Whole Track Buffering). Includes ultra-speed software, simple plug-in PC board. No soldering or cutting required.

\$59.95

Plus \$3.50 Shipping

Add 7% Outside U.S.A.



"Constantly Working on New Products and Software."

**DUPLICATING
TECHNOLOGIES** inc.
Formerly Gardner Computing

99 Jericho Tpke., Suite 202 Jericho, N.Y. 11753

TECHNICAL
INFO ONLY

(516) 333-5504, 5712

WEEKDAY
ORDERS ONLY

(516) 333-5805

EVE. & WKEND.
ORDERS ONLY

(516) 333-5950



TERMS: We accept American Express, Visa, MasterCard and C.O.D. orders. Foreign orders must be in U.S. dollars. All personal checks allow 14 days to clear. Shipping: 7-10 days

Reader Service Card

FREE PRODUCT INFORMATION
FROM ANTIC

Name: (Mr. / Mrs. / Ms.)

Address:

City:

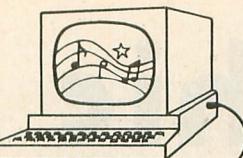
Phone: (

State:

Zip:

**Find out more
about the
products you
see advertised
in the
in Antic. Mail
postage-free
Reader Service Card.**

		Circle Numbers More Information																																																																																																																																																																																																																																																													
1. kind of computer	2. 400/800	3. 600XL/1200XL	4. 800XL/65XE	5. 520ST	6. Hard disk	7. Memory expansion	8. New Atari	9. Buffer/Interface	10. Graphics	11. Databases	12. Telecommunications	13. Music	14. Video monitor	15. New Atari	16. Hard disk	17. Memory expansion	18. Buffer/Interface	19. Graphics	20. Databases	21. Telecommunications	22. Music	23. Video monitor	24. New Atari	25. Hard disk	26. Memory expansion	27. Buffer/Interface	28. Graphics	29. Databases	30. Telecommunications	31. Music	32. Video monitor	33. New Atari	34. Hard disk	35. Memory expansion	36. Buffer/Interface	37. Graphics	38. Databases	39. Telecommunications	40. Music	41. Video monitor	42. New Atari	43. Hard disk	44. Memory expansion	45. Buffer/Interface	46. Graphics	47. Databases	48. Telecommunications	49. Music	50. Video monitor	51. New Atari	52. Hard disk	53. Memory expansion	54. Buffer/Interface	55. Graphics	56. Databases	57. Telecommunications	58. Music	59. Video monitor	60. New Atari	61. Hard disk	62. Memory expansion	63. Buffer/Interface	64. Graphics	65. Databases	66. Telecommunications	67. Music	68. Video monitor	69. New Atari	70. Hard disk	71. Memory expansion	72. Buffer/Interface	73. Graphics	74. Databases	75. Telecommunications	76. Music	77. Video monitor	78. New Atari	79. Hard disk	80. Memory expansion	81. Buffer/Interface	82. Graphics	83. Databases	84. Telecommunications	85. Music	86. Video monitor	87. New Atari	88. Hard disk	89. Memory expansion	90. Buffer/Interface	91. Graphics	92. Databases	93. Telecommunications	94. Music	95. Video monitor	96. New Atari	97. Hard disk	98. Memory expansion	99. Buffer/Interface	100. Graphics	101. Databases	102. Telecommunications	103. Music	104. Video monitor	105. New Atari	106. Hard disk	107. Memory expansion	108. Buffer/Interface	109. Graphics	110. Databases	111. Telecommunications	112. Music	113. Video monitor	114. New Atari	115. Hard disk	116. Memory expansion	117. Buffer/Interface	118. Graphics	119. Databases	120. Telecommunications	121. Music	122. Video monitor	123. New Atari	124. Hard disk	125. Memory expansion	126. Buffer/Interface	127. Graphics	128. Databases	129. Telecommunications	130. Music	131. Video monitor	132. New Atari	133. Hard disk	134. Memory expansion	135. Buffer/Interface	136. Graphics	137. Databases	138. Telecommunications	139. Music	140. Video monitor	141. New Atari	142. Hard disk	143. Memory expansion	144. Buffer/Interface	145. Graphics	146. Databases	147. Telecommunications	148. Music	149. Video monitor	150. New Atari	151. Hard disk	152. Memory expansion	153. Buffer/Interface	154. Graphics	155. Databases	156. Telecommunications	157. Music	158. Video monitor	159. New Atari	160. Hard disk	161. Memory expansion	162. Buffer/Interface	163. Graphics	164. Databases	165. Telecommunications	166. Music	167. Video monitor	168. New Atari	169. Hard disk	170. Memory expansion	171. Buffer/Interface	172. Graphics	173. Databases	174. Telecommunications	175. Music	176. Video monitor	177. New Atari	178. Hard disk	179. Memory expansion	180. Buffer/Interface	181. Graphics	182. Databases	183. Telecommunications	184. Music	185. Video monitor	186. New Atari	187. Hard disk	188. Memory expansion	189. Buffer/Interface	190. Graphics	191. Databases	192. Telecommunications	193. Music	194. Video monitor	195. New Atari	196. Hard disk	197. Memory expansion	198. Buffer/Interface	199. Graphics	200. Databases	201. Telecommunications	202. Music	203. Video monitor	204. New Atari	205. Hard disk	206. Memory expansion	207. Buffer/Interface	208. Graphics	209. Databases	210. Telecommunications	211. Music	212. Video monitor	213. New Atari	214. Hard disk	215. Memory expansion	216. Buffer/Interface	217. Graphics	218. Databases	219. Telecommunications	220. Music	221. Video monitor	222. New Atari	223. Hard disk	224. Memory expansion	225. Buffer/Interface	226. Graphics	227. Databases	228. Telecommunications	229. Music	230. Video monitor	231. New Atari	232. Hard disk	233. Memory expansion	234. Buffer/Interface	235. Graphics	236. Databases	237. Telecommunications	238. Music	239. Video monitor	240. New Atari	241. Hard disk	242. Memory expansion	243. Buffer/Interface	244. Graphics	245. Databases	246. Telecommunications	247. Music	248. Video monitor	249. New Atari	250. Hard disk	251. Memory expansion	252. Buffer/Interface	253. Graphics	254. Databases	255. Telecommunications	256. Music



Dr. T's MUSIC SOFTWARE

THE MOST POWERFUL MIDI MUSIC SOFTWARE IS NOW AVAILABLE FOR THE MOST POWERFUL HOME COMPUTER!

Dr. T's Music Software is currently developing a complete line of MIDI music software taking FULL advantage of the power and features of the ATARI 520/1040ST computers.

NOW AVAILABLE . . .

KEYBOARD CONTROLLED SEQUENCER \$195
Full MIDI parameter/note editing, cut and paste editing, 48 tracks, 126 sequences, 40,000+ notes 520ST, 130,000+ notes 1040ST, MIDI song pointer, and MUCH MORE!

MIDI RECORDING STUDIO \$39
6-Tracks, full cut and paste editing, data compatible with Keyboard Controlled Sequencer, and MORE! Full credit on trade-up to KCS.

CZ PATCH \$99
Graphic display of envelopes, full edit/librarian features, point and click, 240 sounds on the disk!

COMING SOON . . .

A full line of sound editors, music score printing/editing utilities, algorithmic composition tools, and more! Call or write for details.

LIMITED ONLY BY YOUR IMAGINATION . . .

Dr. T's MUSIC SOFTWARE, 66 Louise Rd., Chestnut Hill, MA 02167 (617) 244-6954

CIRCLE 090 ON READER SERVICE CARD

Start Your Own BBS! New for the 520 & 1040ST

This user friendly BBS is loaded with special features...Passwords, E-Mail Message Base, X-Modem Protocol col and can run on any number of drives, including Hard Drive. Will work with any Hayes, Compatible modem. Complete Package with all utilities and Source Code enabling easy modification and customizing of this BBS.

Everything you
need in one
package.

\$54.95

Plus \$3.50 Shipping
Add 7% Outside USA

520 ST BACK-UP!

DUPLICATING TECHNOLOGIES IS
PROUD TO PRESENT

THE 520 ST DUPLICATOR™



**Only
\$39.95**

Plus \$3.50 Shipping
Add 7% Outside USA

Dealer inquiries are welcome,
call for quantity price quote.

Our Famous 1050 DUPLICATOR has now been converted to service the ATARI™ 520 ST. This is a revolutionary, new, software only, disk copy system. Now you can back-up heavily copy-guarded and protected disks. And, most important, if new forms of software protection should appear on the market, Duplicating Technologies will provide you with the necessary software upgrades.

Our exclusive ST DUPLICATOR™ comes complete with user friendly software and instructions.



"Constantly Working on New Products and Software."

DUPLICATING TECHNOLOGIES inc.

Formerly Gardner Computing

99 Jericho Tpke., Suite 202, Jericho, N.Y. 11753

TERMS: We accept American Express, Visa, MasterCard and C.O.D. orders. Foreign orders must be in U.S. dollars. All personal checks allow 14 days to clear. Shipping: 7-10 days

TECHNICAL
INFO ONLY (516) 333-5504, 5712

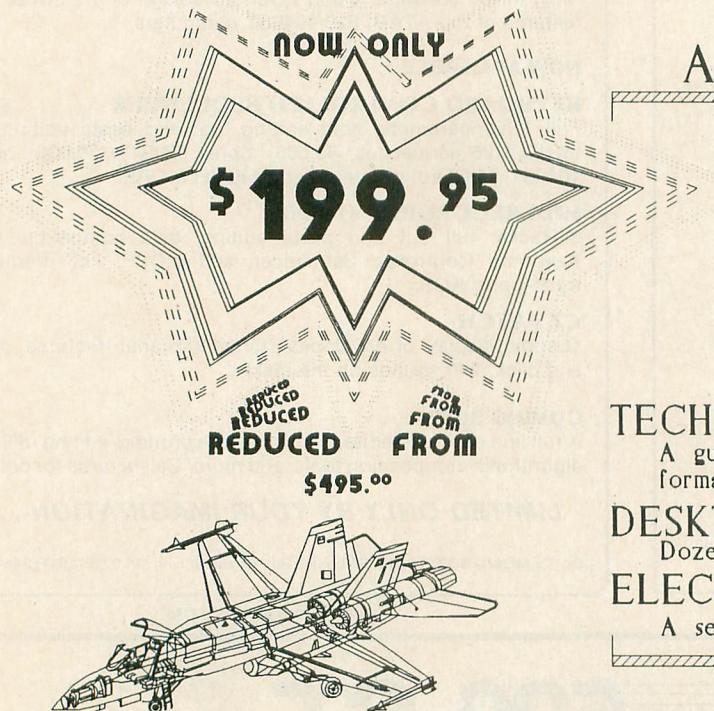
WEEKDAY
ORDERS ONLY (516) 333-5805

EVE. & WKEND.
ORDERS ONLY (516) 333-5950



CIRCLE 026 ON READER SERVICE CARD

the Graphic Artist®



The first software to combine
Computer Aided Design
and
Desktop Publishing
in a single environment.

WRITTEN and DESIGNED By Peter Naleszkiewicz

AUXILIARY SOFTWARE:

FONT EDITOR \$79.95

Use to create new Graphic Artist fonts (like the one you are reading), or modify existing ones. AVAILABLE NOW.

FONTPACK-I \$49.95

Four additional font styles, including the two used in this ad. AVAILABLE IN NOVEMBER.

TECHNIQUES and TIPS \$39.95

A guide for both beginner and expert. Includes file format descriptions. AVAILABLE IN NOVEMBER.

DESKTOP PUBLISHING LIBRARY \$49.95

Dozens of useful pictures as symbols. IN NOVEMBER.

ELECTRONICS LIBRARY \$49.95

A set of electronic symbols. IN DECEMBER.

From the creator of the Graphic Artist comes a 3-D simulation with dazzling graphics, a game for sophisticated players...

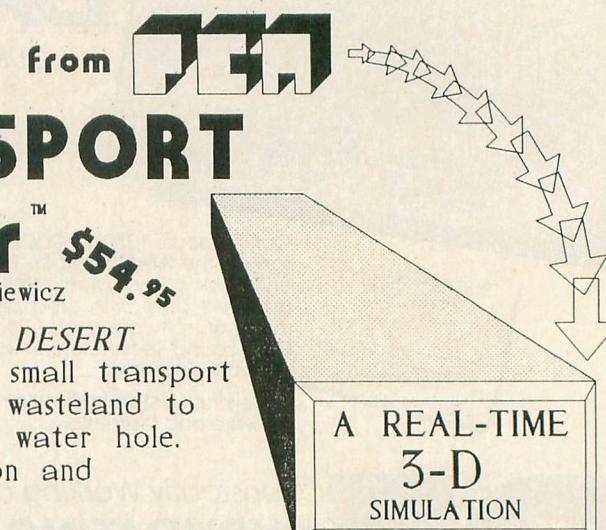
AVAILABLE IN NOVEMBER from



DESERT TRANSPORT Simulator™

WRITTEN and DESIGNED By Peter Naleszkiewicz

A futuristic real-time 3-D simulator, *DESERT TRANSPORT Simulator* has you driving a small transport tanker truck through post World War III wasteland to a small, newly discovered, uncontaminated water hole. Includes complex perspective 3-D animation and features an on-board weapons system.



• THIS ENTIRE AD WAS DESIGNED WITH
AND PRINTED BY THE GRAPHIC ARTIST
and FONTPACK-I USING AN HP LASERJET
PRINTER. Shown ACTUAL size. •



Progressive
Computer
Applications

2002 McAuliffe Dr. Rockville, MD 20851
(301) 340-8398

Response Surface Mapping

New views for 3-D graphics

Z=SQR(X*X+Y*Y)

Turn complicated math functions into easy-to-read graphs that double as moire art. This BASIC program runs on all 8-bit Atari computers, with disk or cassette. An 80-column printer is required.

BY JAMES PIERSON-PERRY

One of the more useful ways to study mathematical relationships is through graphics. Plotting a function usually gives a greater intuitive grasp of how the variables interact with each other. For example, a drawing of a sphere is much easier to comprehend than the function $Z = \text{SQR}(R * R - X * X - Y * Y)$.

Response surface mapping is another way of representing 3-D functions and is widely used for scientific applications. These maps are also called "contour plots" because they resemble the contour lines on topographic land maps. RSMAP generates response surface maps for BASIC functions having one or two variables (X and Y). Analytical uses aside, many such graphs are interesting simply for their visual appeal.

In view of this, it is not surprising that 3-D graphics plotting is a popular software application. Examples of these include Paul Chabot's *GRAPH 3-D* (**Antic**, October 1985) for 8-bit Ataris, and Tom Hudson's *CAD 3-D* for the ST (\$49.95. The Catalog, ST0214). Programs like these let you

continued on next page

create, manipulate and print 3-D images of functions.

Response surface maps use colors or symbols to represent the Z (response) value, rather than plotting the third dimension in perspective. A weather map is a good example of a response surface map. Here, one type of symbol represents low pressure areas, while another symbol represents high pressure areas.

BACKGROUND

Most 3-D plotting programs give the illusion of three dimensions on a flat surface. The resulting image is greatly dependent on the viewing angle and may hide important parts of the function. Response surface mapping programs always look "down" at the function, along the Z-axis. This gives the entire X,Y grid as the viewing field.

The computer evaluates the function at each point on the grid and prints a letter corresponding to the resulting response value. We can extend this technique to examine functions having more than two variables. For example, consider the function $Z = X * X + Y * Y + W * W$. We can make a separate map at various fixed values

of W (called "slices") which, when viewed in sequence, give a good picture of what the overall function looks like.

THE PROGRAM

Type in Listing 1, RSMAP.BAS, check it with TYPO II and SAVE a copy before RUNning it.

When RUN, RSMAP displays a title screen, then pauses and waits for you to type in your function. All standard BASIC arithmetic operators and transcendental functions are allowed. Constants such as PI and E also may be used. You may define any of your own constants in line 1270. (NOTE: Embedded logic operators for discontinuous functions are not allowed.)

Here are some sample functions

$$Z = X * X + Y * Y * PI$$

$$Z = \text{LOG}(\text{ABS}(X)) + \text{LOG}(\text{ABS}(Y))/B$$

$$Z \equiv \text{ABS}(\text{COS}(X) \pm \text{COS}(Y))$$

If BASIC detects any errors, you'll be asked to re-enter the function.

Next, enter the boundaries for the X and Y axes (even if only one variable is used) and the response limits. Estimates of the response minimum and maximum values are automatically generated to guide you in selecting the response limits. These limits

will determine the resolution of the map.

Your Atari will now print the response map, along with a key to the response symbols. A typical map takes from two to five minutes to print. Press the [OPTION] key to abort the printout and enter new parameters.

Here are some additional interesting functions to get you started:

1. $Z = \text{LOG}(\text{ABS}(X)) + \text{LOG}(\text{ABS}(Y))$
X,Y Ranges = -3 to 3
Z Range = -6.5 to 2.5
2. $Z = \text{SQR}(5-X * X - Y * Y)$
X,Y Ranges = -1.5 to 1.5
Z Range = 0 to 2.5
3. $Z = \text{COS}(X) + \text{COS}(Y)$
X,Y Range = -3.14 to 3.14
Z Range = -180 to 180

PROGRAM TAKE-APART

The heart of the map processing is the short subroutine located at the very start of the program to speed execution time.

Lines 1090-1190: Subroutine to evaluate the function over the X,Y grid and translate response values into map symbols. The symbols are stored

AAAAA, B.C,D.E.G, .I, J,K,L .MMH,MMH, .L, K,J,I, .G, E,D,C,B, AAAA
AAAA, ,B.C,D.EF.G, .I, JK, .L, MMH, ,MMH, L, ,KJ, I, .G, FE,D,C,B, AAAA
AAA, ,BB.C,DE,F, .H,IJK,L,M, .M, ,M, L, .L, KJ,I, H, .F, ED,C, BB, AAA
,,B.C,D,E,G, .I, JK, L, M, .NNNNN, M, L, KJ,I, .G, E,D,C,B,, ,
BBB.B,CC,D,E, .G, H,IJ, J, L,M, NN, ,NN, M, L, J, IH,G, .E, DD, CC, BBBB
,,CC, DD, E, G, HI, JK, L, M, NN, 00000000, NN, M, L, KJ, IH,G, .E, DD, CC, .
,,DD,E,FG, .I, JK, L, NN, 0, ,PPP, ,O, NN, .L, KJ, I, .G, F, E, DD, ,
DD, .E, FF, .H,IJ, K, M, N, O, PP, , ,PP, O, N, M, .K, J, JI, H, .F, E, DD
EEE, ,F, G, HI, J, L, N, O, P, Q, , ,Q, P, O, N, L, .J, IH,G, .F, E, DD
FFF, .GG, H,I, J, K, M, N, O, P, Q, , ,RR, ,Q, P, O, N, M, K, J, IH, GG, .FFF
GGG, .HH, H,I, J, L, N, O, P, Q, R, S, , ,SS, R, O, P, O, N, L, .J, IH, HH, GGGG
HHH, .II, J, K, M, N, O, P, Q, R, S, , ,TT, ,S, R, O, P, O, N, M, K, J, II, .HHH
III, JJ, K, L, N, O, P, Q, S, , ,TT, UU, , ,UU, TT, S, ,Q, P, O, N, .L, K, JJ, III
JJJJ, K, L, M, N, O, P, R, S, T, U, U, .UUUUUUUU, U, U, T, SR, Q, O, N, .L, KKK
,, ,L, M, N, O, Q, S, TU, U, .W, ,XXXXXX, W, U, UT, S, ,O, O, N, M, L, , ,
LLL, .M, N, O, P, Q, S, TU, U, W, X, , ,X, ,W, U, UT, S, ,Q, P, O, N, .M, LLL
,,MM, NN, O, Q, RS, TU, U, W, XX, YYYYYYY, XX, W, U, UT, SR, Q, O, NN, MM
MMH, ,NN, O, P, R, ST, U, W, X, YY, , ,YY, X, W, U, T, SR, Q, O, NN, ,MM
MM, ,NN, O, Q, RS, T, U, W, X, YY, , ,YY, X, W, U, T, SR, Q, O, NN, ,MM
MM, ,NN, O, P, R, ST, U, W, X, YY, , ,YY, X, W, U, T, SR, R, P, O, NN, MM
MM, ,NN, O, Q, RS, TU, U, W, XX, YYYYYYY, XX, W, U, UT, SR, Q, O, NN, MM
LLL, .M, N, O, P, Q, S, TU, U, W, X, , ,X, ,W, U, UT, S, ,Q, P, O, N, .M, LLL
,,L, M, N, O, Q, S, TU, U, W, ,XXXXXX, W, U, UT, S, ,Q, O, N, M, L, , ,
KKK, L, .N, O, Q, RS, T, U, U, .UUUUUUUU, U, U, T, SR, Q, O, N, .L, KKK
JJJJ, K, L, M, N, O, P, R, ST, U, UU, , ,UU, TT, S, ,Q, P, O, N, .L, K, JJJJ
III, JJ, K, L, N, O, P, Q, S, TT, UU, , ,UU, TT, S, ,Q, P, O, N, .L, K, JJJJ
HHH, .II, J, K, M, N, O, P, Q, R, S, , ,TT, ,S, R, O, P, O, N, M, K, J, II, .HHH
GGG, .HH, H,I, J, L, N, O, P, Q, R, S, , ,SS, R, O, P, O, N, L, .J, IH, HH, GGGG
FFF, .GG, H,I, J, K, M, N, O, P, Q, , ,RR, ,Q, P, O, N, M, K, J, IH, GG, .FFF
EEE, ,F, G, HI, J, L, N, O, P, Q, , ,Q, P, O, N, M, .K, J, JI, H, .F, E, DD
,,DD, E, FG, .I, JK, L, NN, 0, ,PPP, ,O, NN, .L, KJ, I, .G, F, E, DD, ,
,,CC, DD, E, G, HI, JK, L, M, NN, 00000000, NN, M, L, KJ, IH,G, .E, DD, CC, BBBB
,,B.C,D,E,G, .I, JK, L, M, NN, NN, M, L, KJ, I, .G, E,D,C,B,, ,
AAA, ,BB.C,DE,F, .H,IJ, K, L, M, .M, ,M, L, KJ, I, H, .F, ED,C, BB, AAAA
AAA, ,B.C,D,E,G, .I, JK, L, M, M, M, L, KJ, I, .G, FE,D,C,B, AAAA
AAA, ,B.C,D,E,G, .I, JK, L, M, M, M, L, KJ, I, .G, E,D,C,B, AAAA

$$Z = \cos(X) + \cos(Y)$$

Z=LOG(ABS(X))+LOG(ABS(Y))

in a buffer (B\$) and printed one line at a time.

Lines 1240-1290: Initialize variables and strings. Current color register values are saved and restored at the end of the program.

Lines 1630-1800: Entry of the plotting function. We use the Atari's "forced-read" mode to install the function into the program.

Analytical uses aside, many such graphs are interesting simply for their visual appeal.

Lines 1830-1890: Input X,Y boundaries and ensure the minimum value is less than the maximum value.

Lines 1910-2030: Routine to estimate minimum and maximum values of Z. A TRAP here prevents errors from illegal BASIC math operation, such as LOG(0).

Lines 2260-2410: Generate the response surface map.

Lines 2430-2510: Allow you to generate a new map using the same function but different plotting parameters.

NEXT STEP

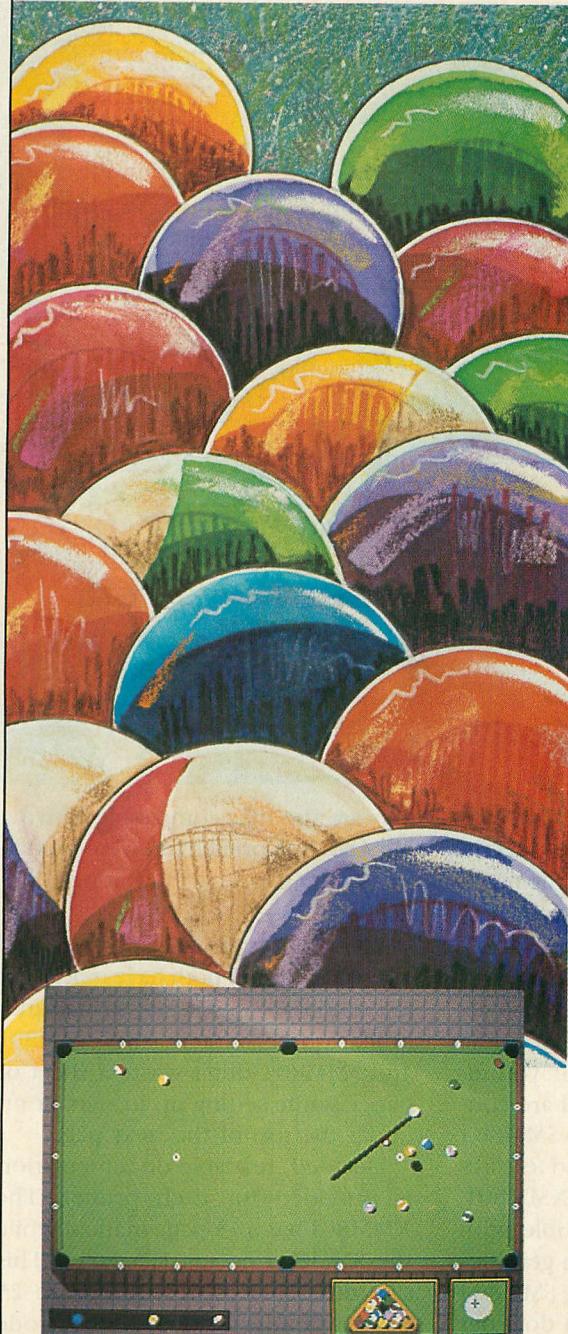
Ambitious readers may want to modify this program to plot functions on a graphics screen instead of a printer. **Antic** would be glad to see a short, elegant enhancement which would support Graphics 15 (ANTIC Mode E), Graphics 7 or any of the GTIA modes.

*James Pierson-Perry of Elkton, Maryland is a research chemist with DuPont. His Molecular Weight Calculator program appeared in **Antic**, May 1986. Pierson-Perry was introduced to Atari computers in 1982 when his daughter's school began using them.*

Listing on page 110

A

RACK YOUR BRAINS



ST-
POOL™

Available for the Atari
520ST or 1040ST;
Color monitor required.

To order:
Contact your Atari ST
Dealer or send
\$34.95 plus \$3.50
for shipping and
handling to:

Shelbourne Software
7221 Rising Sun Ave.
Suite 191
Philadelphia, PA 19111
(215) 725-5644

(PA residents add 6% sales
tax. Visa and MC accepted.)

Atari 520ST & 1040ST reg-
istered trademarks of Atari
Corp. ST-Pool is a regis-
tered trademark of
Shelbourne Software.

Dealer inquiries accepted.

CIRCLE 059 ON READER SERVICE CARD

Two New Atari Printers

Good deal at \$219.95

Atari's long-awaited **XMM801** and

SMM804 dot-matrix printers are solidly in the tradition of previous Atari printers. They offer many (but not all) of the features currently considered standard in the marketplace. And they are priced attractively less than the competition—available as low as \$199.97 as we go to press.

In most respects, both new printers are identical. The XMM801 has a serial interface that plugs directly into 8-bit Atari computers or their disk drives. The SMM804 has a faster parallel interface and is intended for direct hookup to STs. But it can be connected to 8-bit models via the Atari 850 Interface Module or ICD's new P:R: Connection. In fact, if you already own an interface and are considering buying an ST, the SMM804 will give you more speed and features than the identically-priced XMM801.

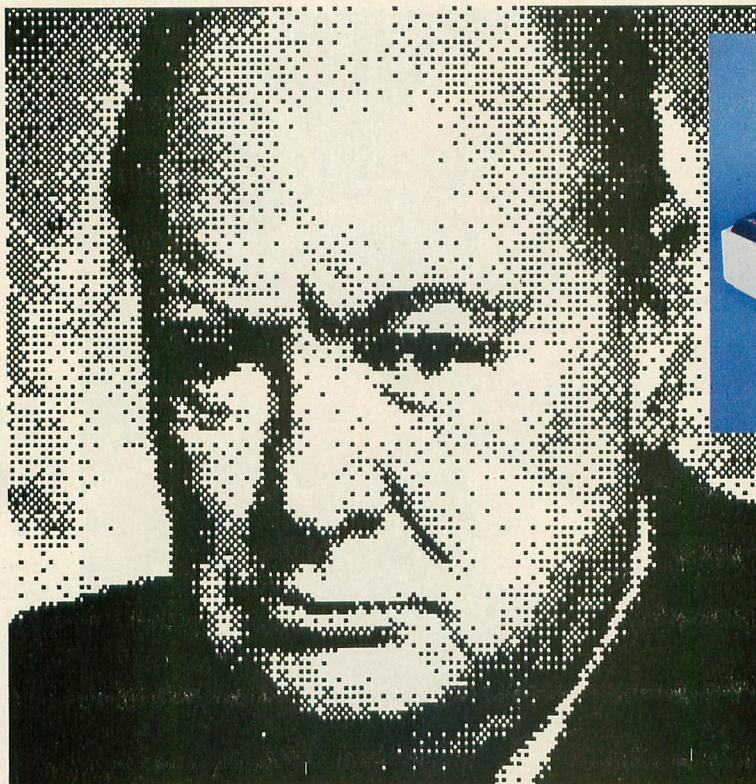
The XMM801 is compatible with Epson's medium-resolution graphics mode, 960 dots per line. The SMM804 supports as many as 1,280 dots per line. Both were designed to be as Epson-compatible as possible, but

they are also fully compatible with the old Atari 825 printer and were primarily designed primarily as a new, improved 825.

The printers are easy to set up and operate, and they both have quick self-test routines. Paper is easy to load and, unlike other printers, the XMM801 and SMM804 don't waste a sheet of paper while setting up to start printing at the top of the next page.

Detailed, readable documentation is provided for each printer. The XMM801 has a 73-page manual while the SMM804 covers 117 pages. This size difference is mostly due to 25 pages of multi-national control code tables for the ST printer.

Both printers use the same type of

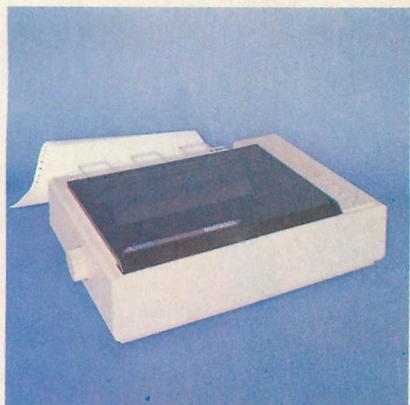
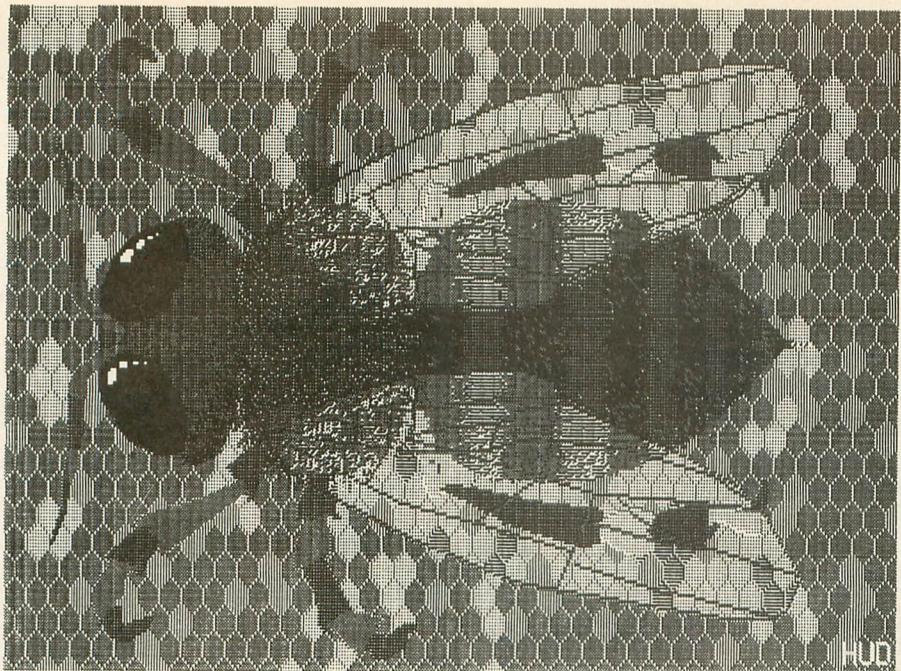


Left: a digitized Churchill printed by Atari's new XMM801 (above).

Opposite from top: the ST hi-res bee printed by the SMM804. Atari Planetarium world map printed by the XMM801. Text sample from SMM804.

ribbon cartridge, and it's easy to change—just pull straight up and out, and snap in a new one. Atari's own ribbons should be available from dealers who sell the printers, or directly by mail from Atari at approximately \$12.95 each.

However, when **Antic** checked for additional ribbon sources, we discovered that the XMM/SMM ribbon is compatible with easily-found ribbons used by the Commodore 1526 and the Mannesmann-Tally Spirit 80. The sample printouts accompanying this article were made on a Pelikan P-116 ribbon we purchased for \$8.95. The P-116 was a bit tricky to load properly, but it seemed to print darker and more evenly than the Atari ribbons.



GRAPHICS COMPATIBILITY

Text printouts look virtually the same on both printers, except that the 8-bit model does not produce italics. Neither model has a near-letter-quality mode, but their regular text printing is not bad at all.

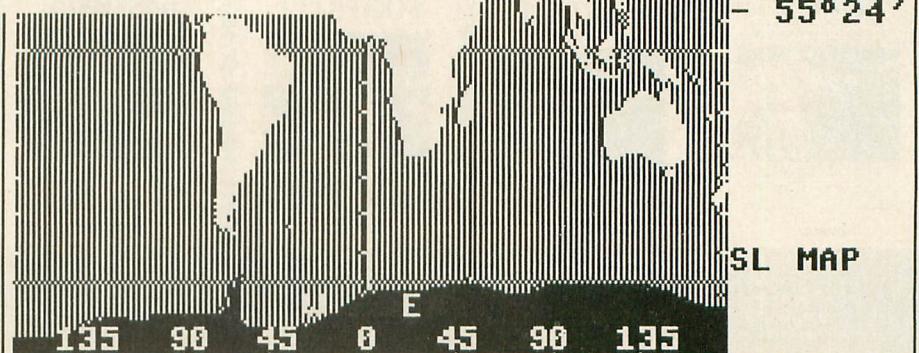
Both printers are capable of producing detailed graphics, under standard Epson printer drivers. However, software compatibility varies widely. Here are our first results:

On the XMM801, our Atari Planetarium world map and star chart printouts were every bit as good as those from our Star Micronics SG-10.

The XMM801 did a respectable job on a digitized photo of Winston Churchill. However, we could not get the XMM801 to work with Lister Plus from The Catalog—or with Broderbund's Print Shop. (According to Broderbund Software, Print Shop has never worked with Atari printers, but they had not yet tested the XMM801 as we went to press.)

The SMM804 generally did justice to the graphics capabilities of ST computers. In a sort of "blind taste test," everyone we questioned at **Antic** preferred the SMM804 rendering of "Stoneage," Darrel Anderson's DEGAS Art Competition winner (**Antic**, July 1986) over that from our in-house Ep-

```
cdefghi jklmnopqrstuvwxyz {13~ç
defghi jklmnopqrstuvwxyz {13~çü
efghi jklmnopqrstuvwxyz {13~çüé
fghi jklmnopqrstuvwxyz {13~çüéä
ghi jklmnopqrstuvwxyz {13~çüéää
hijklmnopqrstuvwxyz {13~çüéäää
ijklmnopqrstuvwxyz {13~çüéääää
jklmnopqrstuvwxyz {13~çüéääääç
```



son FX-85. The SMM804 also turned out accurate dumps of game screens from Epyx's Winter Games and Rogue and Activision's Hacker II.

On the other hand, Tom Hudson's well-known ST Bee screen showed more black-and-white detail on the Epson printout. And in ST desktop screen dumps, white lines were slightly more noticeable on the Atari printouts than on the Epson copies.

Two other Activision ST screen dumps gave different results. When printing a fill pattern from Audio Light's Paintworks, our results were accurate but inconsistent in density. When we tried to print a musical staff from Music Studio, the SMM804 added an extra line-feed after each line. However, Activision said that a fix for Music Studio was in the works. PCBoard Designer from Abacus Software also gave extra line feeds.

SPEED TEST

Both printers are bi-directional, but neither is incredibly fast. On an 800XL with an 850 interface, we compared the print speeds of six printers: the Atari XMM801 and SMM804, Epson FX-85, the Star SG-10 and new NL-10 and the Axiom (Seikosha) GP-550AT. The XMM801 and Seikosha both had serial hookups, while the other four used parallel connections.

We printed a 20,000-character

continued on next page

Your Ticket To The Best In Sports

When was the last time you had the chance to attend a championship sporting event—or better yet, play in one? Gamestar's series of outstanding sports simulations gives you that chance. Make the playoffs. Play in the final round at Pebble Beach. Fight the heavyweight champ for the title.

Every Gamestar simulation is as real as the sport itself, from gameplay to strategy to graphics. So winning the championship won't be easy. If it was, it wouldn't be worth it.

For the very best in sports—the excitement, the challenge, even the championship—Gamestar is your ticket.

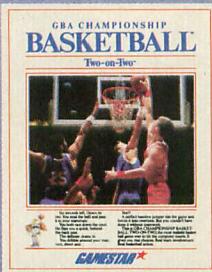


GAMESTAR®

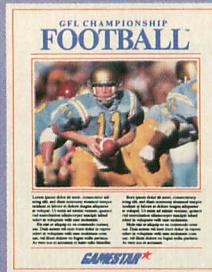
*Admit all to
year-round
sports excitement*



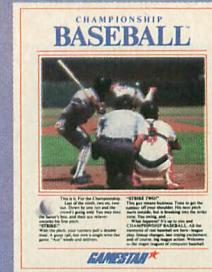
Available for IBM PC, PCjr and Tandy 1000, Commodore Amiga, and compatible computer systems. Coming soon for Apple II, Atari ST and compatible computer systems.



Available for Apple II, IBM PC, PCjr, and Tandy 1000, Commodore 64, 128, and Amiga, Atari ST, and compatible computer systems.



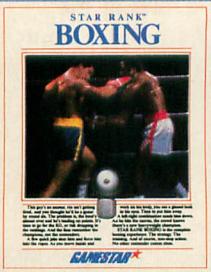
Available for Apple II, IBM PC, PCjr, and Tandy 1000, Commodore 64, 128, and Amiga, Atari ST, and compatible computer systems.



Available for Apple II, IBM PC, PCjr, and Tandy 1000, Commodore 64, 128, and Amiga, Atari ST, and compatible computer systems.



Available for Commodore 64 and 128 computer systems.



Available for Commodore 64 and 128 computer systems.

NUCLEAR WASTE

continued from page 35

may be dropped onto another Type 1 container as long as it bounces to a different location and does not come to rest in contact with Type 1 waste.

Also, you can only hold a can for a short time (depending on which speed you selected). When you are handed a can, a timer in the upper right-hand corner of the screen counts down. When it reaches zero, a buzzer sounds and you must drop the waste in your tracks. Needless to say, this could be disastrous.

You get 10 points for every container successfully dumped. If you manage to fill the pit by placing just

one container of waste as high as the pit's rim, you get a 1,000-point bonus, some neat special effects and an early retirement. If only it were that easy...

DESIGNER'S NOTES

Surviving Uncle Henry's Nuclear Waste Dump does not depend solely on your reflexes, but also on quick, logical decisions. Speed 1 allows quite a bit of time to decide where to drop the waste, while Speed 5 only gives you a split second. Plan ahead, because each move may drastically affect subsequent moves.

The game may seem simple at first, but as the pit fills up, you must consider the physics of how each con-

tainer will react when it hits the pile, which makes things extremely tricky. Only by playing can you learn. But here's a tip: if a container has the choice of falling left or right, it will always go left. And as you play, you will be treated periodically to words of wisdom from Uncle Henry himself.

Now get back to work. Uncle Henry is counting on you. Good help is hard to find.

James Hague lives in Richardson, Texas and has worked in assembly language and BASIC for four years. His game Rockslide, appeared in the May, 1986 issue of Antic.

Listing on page 114 **A**

ATARI PRINTERS

continued from page 51

document created with a simple BASIC program that read a text file character by character and copied it to another file (substituting periods for special characters). Then we had DOS 2.5 copy the file from the disk to each printer in turn.

Printer	Time	Characters Per Second (cps)
Epson FX-85	3:06	108
Star SG-10	3:45	89
Star NL-10	3:45	89
Atari SMM804	5:28	61
Atari XMM801	6:32	51
GP-550AT	9:41	34

(60 words per minute is about 5 cps.)

The speed differences in our ST graphics tests were even more dramatic. The Epson printed the Bee in two minutes, 28 seconds and the SMM801 took five minutes, 30 seconds (2.2 times as long). But the GEM desktop, which the Epson zipped through in 42 seconds, took the Atari four minutes, 55 seconds—seven times as long.

Also, both Atari printers are fairly loud. On a scale of 1-to-10, with 10 the loudest, the XMM801 and SMM804 would be closer to the GP-550AT (about 9) than to the Star SG-10 (about 2).

You'll get quality printouts from Atari's two new 9-pin dot-matrix units. The \$219.95 suggested retail price is their most attractive feature. You won't get all the features, speed, quietness and software compatibility that you'll find in the market leaders, but you'll definitely get your money's worth.

ATARI XMM801—8-Bit Printer

ATARI SMM804—ST Printer

Atari Corp.

1196 Borregas Avenue
Sunnyvale, CA 94086

(408) 745-2000

\$219.95 each

CIRCLE 250 ON READER SERVICE CARD

MARK 4:22 CONSOLE WORK STATION

\$10950

- Smoked Glass Modem Compartment
- Sliding Keyboard Tray
- Compact organization
- Hardware protection
- Increased portability

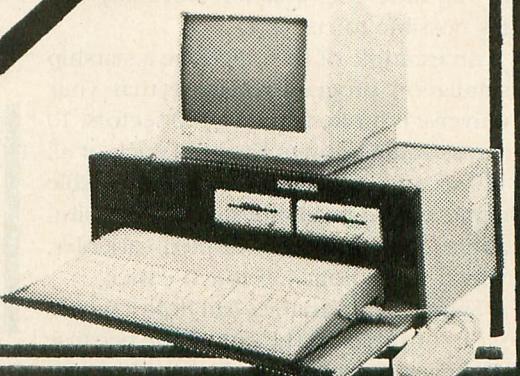
Manufactured by:

BMW & Associates, Inc.
515 Michigan Ave., Troy, Ohio 45373
(513) 339-8093

Available at:
Whitehouse Computers
P.O. Box 4025
Williamsport PA 17701
(717) 322-7700

ACCOMMODATES
ATARI ST AND
XL/XE MODEL

Metal Box
ABS Plastic Face Plate



CIRCLE 015 ON READER SERVICE CARD

BY DAVID PLOTKIN, ANTIC CONTRIBUTING EDITOR

New Owners Column

Lesson 9: Subscripted Variables

This series, which started in the March, 1986 Antic, teaches beginners how to program in BASIC on all Atari 8-bit computers such as the 800XL and the 130XE.

Contributing Editor David Plotkin is a chemical engineer and longtime Atari programmer.

Subscripted variables are very useful for storing and manipulating information. As you gain more programming experience, you'll learn that sometimes it can be limiting to hold values in standard variables (as explained in **Antic**, May 1986, page 107). Each variable must have a unique name, which must be kept track of. Also, Atari BASIC limits you to 128 different variables. Normally this is enough, but it's possible to run out.

An example of this might be a starship simulation program. Imagine that your universe is broken up into 120 sectors, 10 across and 12 down. Keeping track of all 120 sectors, each with a different variable name, would be cumbersome. Such situations cry out for subscripted variables, which make your job much easier.

Subscripted variables can hold a whole series of values at the same time because of their subscripts, which provide an in-

dex to each value. Each element of the subscripted variable has a different subscript and can hold a different value. An example of a subscripted variable is: EXAMPLE(2)=3.5, where

EXAMPLE is the name of the variable, 2 is the subscript, and the value 3.5 is the second element of EXAMPLE.

Subscripted variables are given names just like regular variables. However, they are different from regular variables in two important ways. First, you must tell your Atari how much room to save for the values in each set of subscripted variables. This is done with the **DIM** statement.

PLACING VALUES IN STANDARD VARIABLES IS LIMITED. SUBSCRIPTS PICK UP THE SLACK

Second, values stored in the subscripted variable are accessed by use of the appropriate subscript.

DIM STATEMENT

After you decide on a name for a subscripted variable, you must allocate memory to hold its values. The DIM statement DIMensions the subscripted variable. For example, if the variable UNIVERSE is to hold 100 values, then you would use the following:

```
10 DIM UNIVERSE(100)
```

You can DIMension more than one subscripted variable on each line:

```
10 DIM UNIVERSE(100),STAR(50),HIT(10)
```

Subscripted variables may also have two subscripts, in which case the DIM statement might look like this:

```
20 DIM DOUBLE(20,20),DOUBLE2(10,20)
```

Note that you can DIM more than one doubly-subscripted variable on a line, just as with singly-subscripted variables. You may also DIM both singly-subscripted and doubly-subscripted variables in the same DIM statement. You may *not* use variables with more than two subscripts. And it is important to know that DIMensioning a subscripted variable more than once in a program generates an error.

SINGLE SUBSCRIPTS

Singly-subscripted variables have one subscript that must be an integer, and each element can hold a different value:

```
10 DIM EXAMPLE(10)
```

```
20 FOR J=0 TO 10:EXAMPLE(J)=J*2.2
```

```
30 PRINT "EXAMPLE(";J,")=";EXAMPLE(J)
```

```
40 NEXT J
```

Thus, the subscripted variable EXAMPLE can hold 11 different values, one for each value of the integer subscript which was DIMensioned to 10. Although the subscript must be an integer, the value held by EXAMPLE(J) can be any number, including a calculated number. You can also simply assign a value to a subscripted variable:

```
50 EXAMPLE(0)=100.345
```

Another oddity about subscripted variables is that the subscripts start from zero. Thus, for example, when you DIMension a variable subscript for 10, you will actually have space for 11 values.

Singly-subscripted variables have many uses. This month's program Listing 1 demonstrates how they can be used to record test scores for a full classroom of students. Subscripted variables are quite commonly used with READ/DATA statements. Notice that you *cannot* READ the value contained in the DATA statement directly into the subscripted variable. The following will *not* work:

```
10 READ SCORE(J)
```

Instead, you must READ the value into a regular variable, then transfer it into the subscripted variable:

```
10 DIM SCORE(1)
```

```
20 READ SCORE:SCORE(0)=SCORE
```

The above is perfectly valid, because your Atari sees SCORE and the subscripted variable SCORE(J) as two dif-

A SUBSCRIPT CAN HOLD OVER 5,000 VALUES—A STANDARD VARIABLE, ONLY ONE

ferent variables. The same principle applies when you use INPUT and GET to obtain a value for a subscripted variable—you must INPUT or GET a regular variable, then equate the subscripted variable to the regular variable:

```
10 DIM SCORE(1)
```

```
20 PRINT "What Score":INPUT SCORE
```

```
30 SCORE(0)=SCORE
```

DOUBLE-SUBSCRIPT ARRAYS

Each subscript of a doubly-subscripted variable must be DIMensioned:

```
10 DIM UNIVERSE(10,12)
```

Doubly-subscripted variables are often thought of as being represented by rows and columns. Thus, UNIVERSE would have 10 rows and 12 columns, holding 10×12 , or 120 values. Because of the analogy to rows and columns, doubly-subscripted variables are often referred to as **arrays**. To access the values held in an array, you must specify *both* subscripts:

```
10 DIM UNIVERSE(5,6):UNIVERSE(1,4)=2.1
```

```
20 PRINT UNIVERSE(1,4)
```

Again, the subscripts must be integers. The same rules for singly-subscripted variables apply to arrays.

As you can see, it is now quite easy to solve the problem of keeping track of 120 sectors in your starship simulation. Just DIMension a 10×12 array and store a number into each element of the array. This month's Listing 2 is an example of how you might carry this out. Notice how the nested FOR/NEXT loops are used to access each element of the array UNIVERSE by stepping through the subscripts. Using the RND (random number) function assures that there will be a different number of enemy ships in the sectors each time we play the simulation.

CALCULATED SUBSCRIPTS

I have stated that the subscripts must be integers. In fact, if you do specify a subscript which is not an integer, your Atari will round it to the nearest integer anyway.

You can also calculate a particular subscript by using the mathematical rules explained in **Antic's** July, 1986 New Owners Column. This option gives you considerable flexibility. For example, while you are limited to having two subscripts in an array, you can represent three-dimensional space with a singly-subscripted variable by doing some calculations on the chosen 3-D coordinates:

```
10 DIM SPACE(1000)
```

```
20 FOR J=0 TO 999:SPACE(J)=RND(0):REM PUT SOME  
VALUES IN SPACE
```

continued on next page

```

30 PRINT "INPUT X,Y,Z COORDINATES (0-9)":INPUT
X,Y,Z
40 IF (X<0 OR X>9 OR Y<0 OR Y>9 OR Z<0 OR Z>9)
THEN PRINT "COORDINATE OUT OF RANGE!":
GOTO 30
50 PRINT "VALUE IS ";SPACE(X+Y*10+Z*100):REM
CALC. THE SUBSCRIPT.
60 GOTO 30:REM AROUND AGAIN

```

Both singly-subscripted and doubly-subscripted variables can be used like regular variables in mathematical equations and in GOTO/GOSUB statements. In fact, subscripted variables can be used just about anywhere that regular variables are used—except, as stated above, in READ, INPUT, and GET statements.

FRACTAL LISTING

Listing 3 makes extensive use of arrays to store values for later use. The program generates a shape on your screen which looks like a different 3-D landscape every time. The program uses a form of fractal arithmetic, which generates shapes that imitate nature. Memory requirements for Listing 3 are 32K disk and 24K cassette.

When the program starts, it will ask you how many levels you want. The higher the number of levels, the finer the resolution of the picture and the more lifelike the result. But the higher-numbered levels also take longer to draw on the screen. Level 6, the highest resolution, takes several hours, so be sure you want your computer tied up that long.

Listing on page 112 

It's Here!

BASIC COMPILER

only
\$69.95

For Atari 520/1040 ST

- So easy to use!
- A menu driven GEM application!
- Fully ST BASIC compatible!
- Produces small efficient code!
- Generates a stand alone program!
- Supports GEMSYS and VDISYS calls!
- Has hooks to BIOS!
- No line numbers needed
- Double-precision floating point numbers fully implemented

For the **BEST** professional BASIC Compiler
on the market today send:

personal check (wait 10 days to ship), money order,
cashiers check, VISA and M/C, C.O.D. (add \$2.00). (California
residents add applicable sales tax.)
— Dealers Welcome —



Logical Design Works, Inc.
780 Montague Expwy., Suite 205
San Jose, California 95131
(408) 435-1445
Telex: 294526 LDW UR

CIRCLE 037 ON READER SERVICE CARD

X-10[®] POWERHOUSE[™]

ATARI HOME COMPUTER INTERFACE

**A new dimension
in home safety,
energy savings
and security**

Now you can finally use your ATARI home computer to conveniently create, store and recall programs that can be loaded into the X-10 POWERHOUSE to control lights, appliances and other devices hooked up to X-10 Control modules throughout your home.

The X-10 POWERHOUSE control system provides a new dimension in home security, safety and energy savings.

Each interface kit includes an X-10 POWERHOUSE, a special ATARI interface adaptor and the Building Manager software disk.

Suggested List \$119.95

VISA/MC/COD Add \$3.50 for shipping.

Works with all 8 bit Atari home computers
with at least 48K of RAM.

Building Manager is a trademark of Terrific Peripherals. Atari is a registered trademark of Atari Corp. X-10 and Powerhouse are registered trademarks of X-10 Corporation.

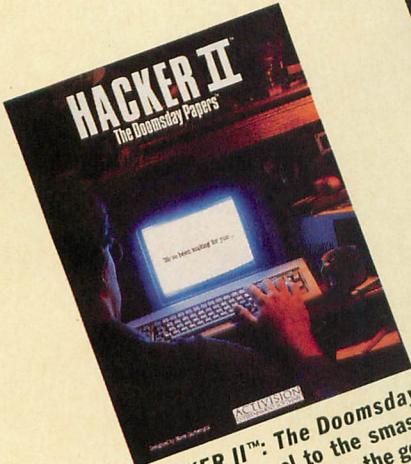
Available at your local computer dealer
or from Terrific Peripherals



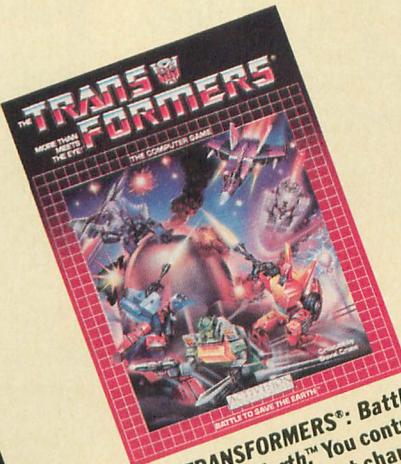
17 St. Mary's Court
Brookline, MA 02146
(617) 232-2317

CIRCLE 067 ON READER SERVICE CARD

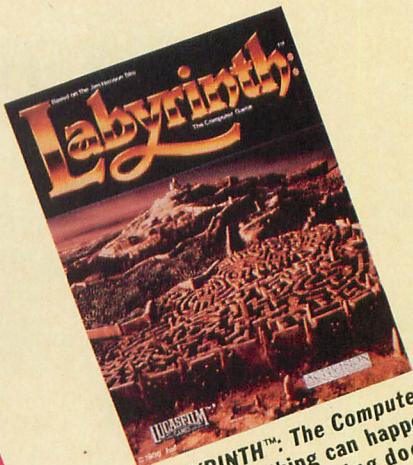
SIX GREAT NAMES IN COMPUTER GAMES



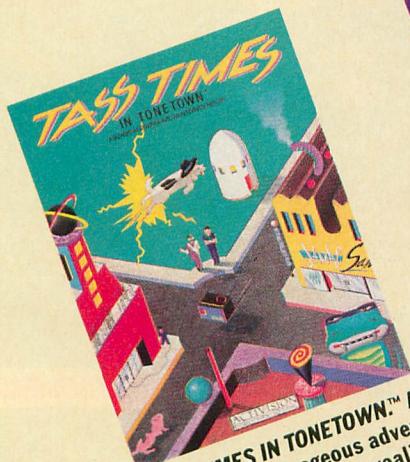
HACKER II™: The Doomsday Papers.™ Sequel to the smash hit, Hacker.™ This time the government needs a little favor; as a computer wizard you must hack your way through Siberian hazards in a maximum security complex.



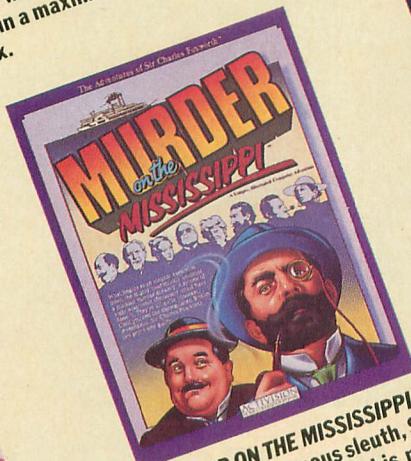
THE TRANSFORMERS™: To Save The Earth.™ You control your favorite Autobot characters in a battle against the evil energy-stealing Decepticons in this non-stop action adventure of strategy, imagination and skill.



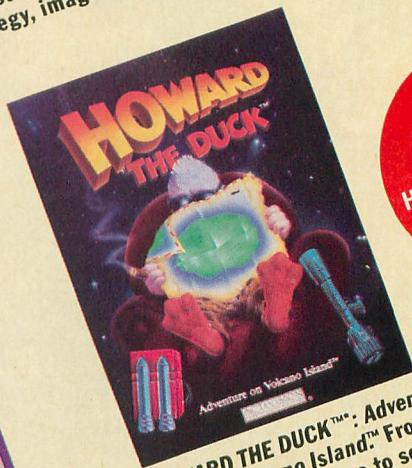
LABYRINTH™: The Computer Game.™ Anything can happen here and everything does! Puzzle your way through this maze of graphic madness, from the Wall of Hands to the Wise Man's Garden. Based on the movie but...expect the unexpected.



TASS TIMES IN TONETOWN.™ A fast paced, outrageous adventure into an alternate reality where the top tune is Tass by the Daglets, the hot spot is Fast Freddie's and everyone is too tass for words.



MURDER ON THE MISSISSIPPI.™ Join Britain's famous sleuth, Sir Charles Foxworth and his not-so-faithful manservant Regis, in this dangerously entertaining 'whodunit' on board the Delta Queen. Solve the mystery and you may win your own River-boat trip.



HOWARD THE DUCK™: Adventure on Volcano Island.™ Adventure on Volcano Island.™ From comic book to cinema to software! Volcano Island is no resort, but then Howard is no ordinary duck. Only quack-fu, quick wits, and you can keep Howard from becoming one plucked duck.

Ask your retailer
about our
HOT HOLIDAY OFFERS
worth \$245.

For most leading computer systems.
Available this fall from ...

ACTIVISION
ENTERTAINMENT SOFTWARE

Activision is the registered trademark of Activision, Inc. © 1986 Activision, Inc. The Transformers and associated characters are trademarks of Hasbro, Inc. © Hasbro, Inc. All rights reserved.

TM & © 1986 Marvel Comics Group, a division of Cadence Industries Corporation. Licensed by Merchandising Corporation of America, Inc. *Labyrinth* is a trademark of Henson Associates, Inc. used by Activision under authorization. © 1986 Henson Associates, Inc. & Activision, Inc. All rights reserved.

CIRCLE 082 ON READER SERVICE CARD

For
APPLE®
and
COMMODORE 64™

When sorcery ruled, and trolls and minotaurs still walked this Earth,
a party of six intrepid adventurers set out to find the Nine Rings
and use them to destroy the Dark Lord. This is your quest.
This is your...

Also
available
on the ATARI®
and ATARI ST®

PHANTASIE™

A MULTIPLE-CHARACTER ROLE-PLAYING ODYSSEY

Look for this new, exciting game
at your local computer/software
or game store today!

If there are no convenient stores
near you, VISA & Mastercard holders
can order direct by calling toll-free
800-443-0100, ext. 335.

To order by mail, send your check to:
STRATEGIC SIMULATIONS, INC.,
1046 N. Rengstorff Ave., Mountain View,
CA 94043. Please add \$2.00 for shipping
and handling (California residents,
add 7% sales tax). All our games
carry a "14-day satis-
faction or your
money back"
guarantee.

**WRITE FOR A
FREE COLOR
CATALOG OF
ALL OUR GAMES.**

PHANTASIE is \$39.95.



On 48K diskette for Apple II with Applesoft ROM,
II+, IIe and IIC. Also on diskette for Commodore 64™.

Apple is a registered trademark of Apple Computer, Inc.
Atari and Atari ST are registered trademarks of Atari, Inc.
Commodore 64 is a trademark of Commodore Electronics, Ltd.
©1986 by Strategic Simulations, Inc. All rights reserved.

SSI™

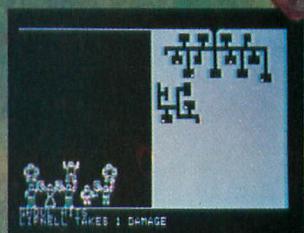
STRATEGIC SIMULATIONS, INC.



An attack by killer bees in the colorful
countryside.



The wave of deadly monsters continues
as dwarfish Kobolds threaten your party.



One of your comrades is injured by Ghouls
during a search of the dungeons.



A sample composition of your party showing
race, class and status.

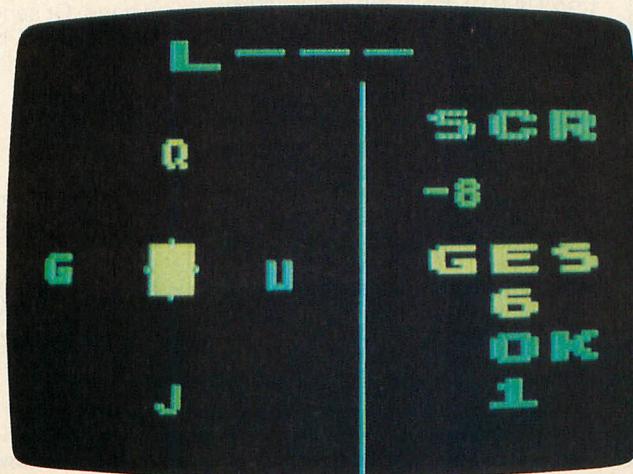
BY MATTHEW RATCLIFF

Spellblast

Space-action spelling action

Spellblast combines rapid-fire arcade action with the time-honored Hangman format to bring children a fun way to learn spelling. The BASIC program works on all 8-bit Atari computers with a minimum of 24K memory, with disk or cassette.

Many children automatically seem to dislike things that are supposed to be good for them. Well, just leave out the word "educational" when you introduce your children to Spellblast, a



In this fast-action spelling game, zap the correct letter before it reaches the starbase at the bottom of your screen.

space-action version of Hangman. The kids will soon be spelling better than ever, and they'll be having too much fun to realize that Spellblast is supposed to be "good for them."

The game can also be easily customized to help children—and adults—practice spelling the exact words they need more work on.

PLAYING SPELLBLAST

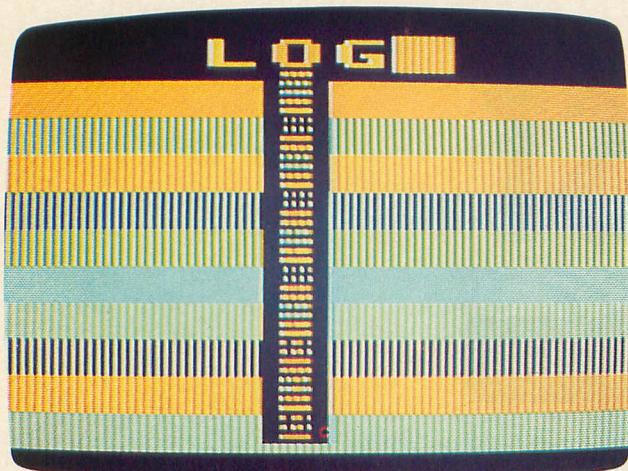
After the title page is displayed, pressing the joystick button calls up the instruction screen. Press the joystick button a second time to arrive at the topics menu. Move the joystick left and right to choose the total words to be spelled per game. The default value is 10, with a maximum of 50. Move the stick up and down to pick one of the desired topics from the display. Press the joystick button to begin game play. This published listing has three topics for spelling practice:

1. Animals, Fish & Fowl
2. Musical Instruments
3. Computer Terminology

A series of blanks for letters appears across the top of the screen. On the right is a display of the current score (SCR), total guesses for a given word (GES) and the number of correctly chosen letters in the word (OK). On the left is the play area, where your "spellbase" appears in the center of a wave of attacking letters.

Four letters approach your base from above, below, left and right. At least one of these letters *might* fill a blank. Just point the joystick handle

continued on next page



Guess the whole word by pressing the [SPACEBAR]. Typing a correct letter zooms it into the correct space and gives you 10 points.

toward your guess—don't press the trigger button. If you guessed right, the letter you blasted will fill each blank where it belongs in the word. Each correct letter scores two points, but a wrong guess deducts two points. If you think that none of the four letters in a turn are correct, press the joystick button to pass without a wrong-guess penalty. Holding down the joystick button also lets you pause the action and think a bit, before the next quartet of letters descends upon you.

As soon as you think you know the whole word, press the [SPACE BAR]. A large flashing cursor appears at the first blank space remaining in the word. Typing a correct letter zaps it into the blank and adds 10 points to your score. An incorrect guess sends you back to the play screen with a new wave of letters.

Correct completion of a word gives you a 10-point bonus. If you allow a wave of letters to reach your spellbase and destroy it, you lose 10 times the number of points earned in the current word—after which the correct spelling is shown. After you spell all the words for the game, the total, high score and best guess ratio are displayed. Press [Q] whenever you want to quit.

TYPING IT IN

Type in Listing 1, SPELLB.BAS, check it with TYPO II and SAVE a copy before you RUN it.

If you have trouble typing the special characters in lines 5000-5068, don't bother typing them in. Listing 2 will create these lines for you and write them to cassette, or to a disk file called SLINE.LST. Now type NEW and LOAD Listing 1, then ENTER the file created by Listing 2. Make sure you SAVE a copy of the combined program before you RUN it.

CUSTOMIZING SPELLBLAST

Adding new topics or words to Spellblast is easy. First, change the value of TOPICS in line 2820. Next, add an appropriate menu bar to the number of topics available. Follow the example menu in lines 2850-2870, when adding a new menu line. For example, suppose we are going to add European Countries. TOPICS would then have to equal four in line 2820. We would then add a line to the menu as follows:

2880 POSITION 6,8:
"4. EUROPEAN COUNTRIES"

Once these steps are complete, just add DATA to the program. There must be five words per line, but if you're a few words short, just repeat some of those already listed in the topic. The beginning line number and the total number of lines in the new topic,

COPY II ST™

BACKUP PROTECTED SOFTWARE FAST.

From the team who brought you COPY II PLUS (Apple), COPY II PC (IBM) and COPY II MAC (Macintosh) comes a revolutionary new copy program for the Atari 520 and 1040 ST computers.

- Copies many protected programs—automatically. (We update COPY II ST regularly to handle new protections; you as a registered owner may update at any time for \$15 plus \$3 s/h.)
- Supports single and double sided drives.
- Includes both a fast sector-based copier and a true bit copy mode for protected disks.

Requires an Atari 520 or 1040 ST computer with one or two drives.

Call 503/244-5782, M-F, 8-5:30 (West Coast time) with your  in hand. Or send a check for \$39.95 U.S. plus \$3 s/h, \$8 overseas.

\$39.95

Central Point Software, Inc.
9700 S.W. Capitol Hwy. #100
Portland, OR 97219

Central Point Software
INCORPORATED

CIRCLE 016 ON READER SERVICE CARD

Backup utilities also available for the IBM, Apple II, Macintosh and Commodore 64.

This product is provided for the purpose of enabling you to make archival copies only.

must also be added following the data in line 20000. In our example, you could add line 20010 as follows:

20010 DATA 10040,5

You would then be able to select from four topics for the game.

You are limited only by the size of the screen for topics, which will allow 17 with the current display layout. The words are limited in length to 10 characters. Any more than this causes wrap-around and confuses the display (but does not crash the program).

Memory limitations can be remedied by keeping each topic in separate text files on disk or cassette. Spellblast could then be modified to ENTER new DATA lines in place of the old ones, along with a new set of topics.

PROGRAM TAKE-APART

200-290: Select a wave of four letters for the game-play loop.

300-595: Draw a wave of characters, get joystick input and set flags.

600-650: Clear the game-play area of the screen.

1000-1430: Display the game title screen.

1500-1610: Select a new word at random from the current topic.

1620-1740: Letters-hit-spellbase routine. Deduct points and continue with a new word.

1750-2020: Spell out the word from keyboard input.

2030-2230: Process selected letter from joystick input and see if word is complete.

2300-2780: End-of-game routine. Print out totals and wait for keypress.

10000-10037: Word DATA for three topics (exactly five words per line.)

20000: DATA indicating beginning line number and total lines of word DATA under each topic.

In May, 1986 Matthew Ratcliff of St. Louis, Missouri won the Antic Award for Outstanding Contributor to this magazine.

Listing on page 107



Goodies
for Your Atari!

NEW ANTIC CLASSIFIED ADS

**"Garage
sale" that
reaches
100,000
Antic
readers.**

THE ATARI
TEN COMMANDMENTS

II

**"We shall create a computer
that is as smart as the people
who buy it."** *Jack Tramiel
ATARI CORP.*

The real genius of the ATARI 1040ST™ is that the level of performance you want is already built in.

Our competitors, however, think they can sell you a computer with a puny memory, and then charge you a small fortune to expand it.

We don't think that makes much sense.

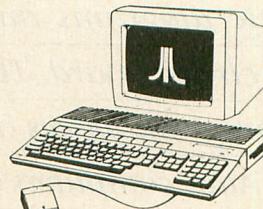
That's why the 1040ST offers you 1024 Kbytes of memory built in for the incredibly low price of just \$999. That's less than \$1 per Kilobyte.

About the only thing the competition offers is the

chance to spend big bucks to upgrade their systems to where the ST™ started in the first place.

We're pretty sure which computer smart shoppers will buy.

The ATARI 1040ST is at your computer retailer now.



ATARI®

© 1986, Atari Corp.
ATARI, 1040ST, and ST are TM's or reg. TM's of Atari Corp.

CIRCLE 008 ON READER SERVICE CARD

Stepper Motor Robot-Controller

Have you ever wanted to use your Atari to move things? Perhaps to roll a robot around, direct a photocell scanner from across a room, or move a manipulator arm? Stepper motors can do it—with the interface board and software described in this article. Note: To complete this project successfully, you must be enough of an electronics hobbyist to read schematic diagrams and solder a circuit board. The BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.

Moving real things with your Atari



Stepper motors move the print head and the paper feed on dot matrix printers. They move the head assembly on your disk drive in and out with great precision, accessing different disk tracks. In fact, steppers are very versatile and would be used for even more purposes except that you can't just connect them to a power source and switch them on and off. They must be controlled with sophisticated hardware—such as your Atari computer.

(Antic successfully tested the stepper motor interface board and software provided by the authors. But because we wanted to get this important (and thoroughly detailed) material into print as quickly as possible, we did not take time to rebuild the hookup from scratch, as is our usual procedure when publishing hardware-software projects.—ANTIC ED)

HOW STEPPERS WORK

Stepper motors rotate only a little bit when pulsed, typically 1.8 to 3.75 degrees. But they do it with precise accuracy and powerful torque. These motors move something into position and lock it there firmly. Unlike most other tools for moving things, stepper motors can tell you exactly how far and how fast they have moved, and which way they are pointing.

All electric motors have two basic parts—the armature, which turns, and the stator, which doesn't. Magnetism pushes and pulls the armature with the stator. In a conventional motor, when the armature almost gets to where magnetism is moving it, brushes contact new areas and the magnetic polarity is switched. The armature suddenly has a long way to go again—rather like coaxing a horse forward with a carrot on a stick.

Most conventional motors have only one stator coil, but stepper motors usually have four. Steppers also use a permanent armature magnet instead of armature coils, commutators and brushes. Stepper motors let the armature catch the carrot, and they magnetically lock the armature into each position. Turning on another coil of the stator and turning off the previous coil moves the armature another step and locks it into a new position.

The stepper motor controller rapidly distributes precisely timed bursts of electricity to the different coils of the stepper motor and provides the timing to control the speed. It can also count the number of steps traveled—that is, how far the armature has been turned—with computer-like accuracy. And this is where your Atari comes in. The software and hardware explained in this article will let you use your Atari as a stepper motor controller for many robotics-type projects of your own choosing.

HOOKING UP

An Atari 8-bit computer has excellent Input/Output capabilities that include two joystick ports, each containing two digital I/O pins, two analog (pad-

Step #	Q1	Q2	Q3	Q4
1	ON	OFF	ON	OFF
1½	ON	OFF	OFF	OFF
2	ON	OFF	OFF	ON
2½	OFF	OFF	OFF	ON
3	OFF	ON	OFF	ON
3½	OFF	ON	OFF	OFF
4	OFF	ON	ON	OFF
4½	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF

Figure 1

idle) inputs, a trigger input, a five-volt direct-current source (+5VDC) and a ground. These items meet the needs of most stepper motors. The digital I/O lines can be used in a joystick port to turn the stepper motor coils on and off, while the +5VDC and ground can power the interface circuit. The source of the current to power the motor depends on the stepper motor used.

In our sample interface, we'll use an Airpax 86402, a +12VDC four-phase stepper. This is a good choice because +12V is easy to get and the motor is

SOME SUPPLIERS

Below are three electronics sources where the authors found good deals on key parts for this project. This short list is clearly not meant to be a complete guide to all possible parts suppliers throughout the U.S.

John J. Meshna Jr., Inc.
19 Allerton St.
Lynn, MA 01904
(617) 595-2275
Stepper Motor SP-369B31 \$3.50

Jerryco
601 Linden Place
Evanston, IL 60202
(312) 475-8440
11.5VDC Power Supply J-3895
\$7.50

H & M Engineering
1945 S. Lincoln St.
Springfield, IL 62704
(217) 787-8422 (after 5 p.m.)
Stepper Motor
Printed Circuit Board \$8.50

strong and precise—only 1.8 degrees per step—but mostly because it's cheap. In fact, we can buy the whole controller and motor with power supply for less than \$25. Steppers are usually fairly expensive, but if you buy from surplus stores the prices get ridiculously low (\$3.95 for the one we used).

To turn the stepper motor, we apply +12V to different phases (combinations) of stator coils in turn. The stepper can be turned in half steps by using another set of combinations. But the half steps don't have the same powerful torque as the full steps and your project will probably not need to use them.

Some stepper motors need different arrangements for coils and phases. These can be obtained from the stepper manufacturer. *Figure 1* shows which coils to send power to for different amounts of clockwise and counter-clockwise rotation, on an Airpax and similar motors.

We will assign one digital I/O pin in the joystick port to each coil, and use that pin to turn the power on and off for that coil. The Atari software will regulate the combination of coils to power during each phase, take care of the timing and keep track of the stepper position.

We must build a circuit to tell the coils when the joystick lines go high or low. We'll use a 2N3055 transistor to turn the power on and off. A 7404 integrated circuit will turn the transistor on and off with the digital line, and costs as little as 15 cents. A diode keeps the motor noise out of the computer, a pull-down resistor keeps false signals away and a power resistor cools the motor.

HIGH-LOW

When the joystick line for a coil goes low, the 7404 sends +5V to the base of the transistor, turning that transistor on and allowing the current from the motor to flow through the transistor to ground, powering that coil. The current goes through a power resistor before reaching ground, however, limiting total current flow.

continued on next page

When the joystick line goes high, the 7404 output and the transistor are turned off, stopping the current flow in that coil. We invert the pin/power relationship because the Atari normally puts all four pins high after a system reset. That would simultaneously power all four phases of the stepper before the program takes over and heat up the motor unnecessarily.

A diode between the 7404 and the transistor allows current to flow from the chip to the transistor, but not vice versa. This prevents motor noise from backing up through the system. The pull-down resistor keeps the transistor off until the computer supplies a signal. This is repeated once for each coil. The 7404 handles all four digital signals, triggers each transistor, and is powered and grounded by the joystick port.

The power and ground for the stepper motor come from a +12VDC power supply. A power supply from an Atari 5200 video cartridge system is rated at +11.5 VDC, which is close enough. There are ample 5200 power supplies on the surplus market for \$7-\$8 each.

Assembly of the interface board is comparatively easy, but beginning hardware hobbyists should work carefully and use a low-wattage soldering iron. Follow the schematic diagram in *Figure 2* if you are using perforated board, which works fine if you don't want to etch your own board. Or work from *Figure 3* if you are making a printed circuit. Use a socket for the 7404, make sure your solder joints are good and don't short the IC's pins together. Watch out for correct wire connections to the 2N3055.

If you are using the Airpax 86402 stepper motor, connect the two red wires to the positive lead of the power supply. The other four wires are the individual phase wires and should be connected to the board as follows:

Yellow Q1
Orange Q2

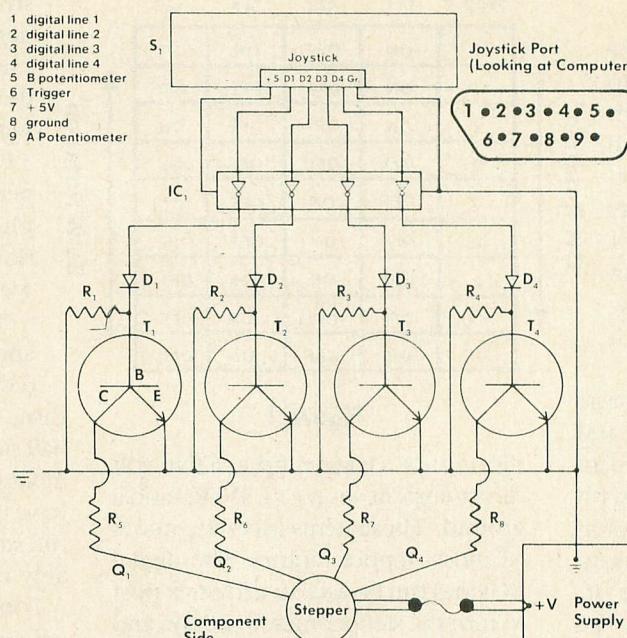


Figure 2

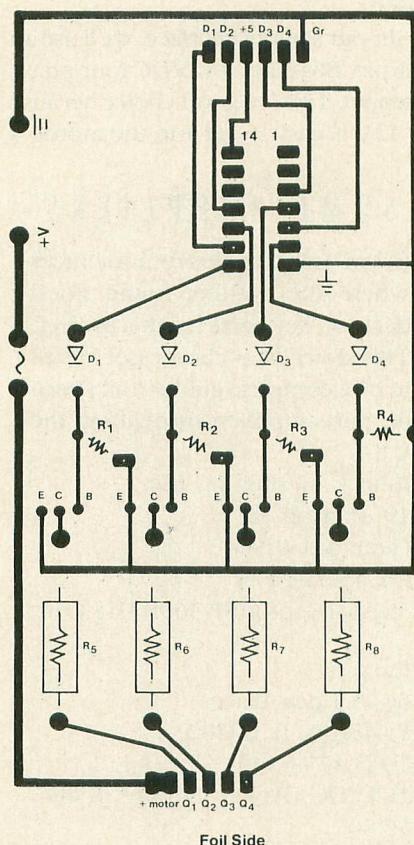


Figure 3

Brown Q3
Black Q4

The stepper motor plugs into the interface board via a polarized con-

nector. Plug the power supply to the board, following the correct polarity. Plug the DB-9 socket into the first joystick port, plug in the power supply and RUN the software.

Our stepper program was written to control various different motors. And different brands of stepper motor have different maximum stepping speeds. When performing a full-speed movement, the program may sequence the steps a little too quickly for your particular model of stepper motor, which would cause erratic movement. If necessary, insert a FOR/NEXT delay loop between steps, to smooth out the motion.

THE PROGRAM

Type in Listing 1, STEPPER.BAS, check it with TYPO II and SAVE a copy before you RUN it.

This program was originally written to raise and lower a camera platform in precise increments. (See adjoining story, *Steppers In Microphotography*). But the modifications to move almost anything else are simple. The program includes routines for quickly moving the motor in either direction, moving it to a given point, keeping track of the stage position, adjusting speeds, signalling when a move is complete and moving from point to point.

Each time a phase is powered, some I/O pins must be turned on and some off. This corresponds to putting ones and zeros into PORTA (location 54018, \$D300). PORTA is the memory location of joystick port 1 when it is being used as a data register. POKE that location with the decimal equivalent of the proper binary number (5 for 0101, 9 for 1001, etc.) to push the four joystick pins high or low. Labeling each phase number with a variable makes it clearer. Then we just POKE PORTA,A:POKE PORTA,B:POKE PORTA,C etc., to turn the motor.

By noting how many times we've POKEd the stepper, we can record its

motion and then turn it to selected positions with precision. Inserting a FOR/NEXT timing loop creates a variable delay to control the speed. POKE PORTA with A,B,C,D,A,B etc. in order, to turn the motor turns in one direction. If you POKE in the reverse order, it turns in the opposite direction. POKE PORTA with A,E,B,F,C,G, D,H,A,E,B etc. to turn it in half steps.

PROGRAM TAKE-APART

The program's REM statements explain various sections. Line 310 sets up joystick port 1 for output. Memory location 54016 (\$D302) is the PORTA control register (PACTL), and these POKEs set up PORTA for output to the joystick port.

I should mention a few other programming tricks used in the display routines. One trick is to DIMension BL\$ in line 270 and PRINT it in line 490 (every time the menu is rewritten). BL\$ is a character string filled with blanks, and here it clears the command line.

Second, although the menu and commands are in Graphics 1, the display settings are in Graphics 0. Lines 110-120 print the display and the initial settings. Note that PRINT #6; prints to the Graphics 1 screen, while PRINT is used to print in the text window.

The statistics are updated by POKEs to TXTROW and TXTCOL (memory locations 656 and 657) throughout the program. These locations hold the row and column, respectively, for the current cursor location in the text window. In line 890, for example, each time the program moves the stage and updates P (the present location variable), the cursor goes to row 2, column 28 where P is PRINTed. You must also PRINT a trailing space to clear the old number.

Finally, the ticking noise in the keyboard speaker as the program moves the stage up and down is produced by POKEs to CONSOL, memory location 53279 (\$D01F). This is the same location used for reading the console keys. By using FOR/NEXT loops and experimentation, you can create a "fifth voice" for your Atari.

Using stepper motors with your

INTERFACE PARTS LIST

Label	Quan.	Description	Radio Shack #	Price
T1-T4	4	TIP 3055 transistor	276-2020	\$1.59
D1-D4	4	IN4001 diode	276-1101	\$.49
R1-R4	4	1000 ohm 1/2watt	271-1321	\$.39
R5-R8	4	50 ohm 2 watt resistor		
IC1	1	7404 integrated circuit (with 14 pin socket)	276-1802 276-1999	\$.99 \$.89
S1	1	DB9 socket	276-1538	\$2.49
	1	perforated board	276-1394	\$1.89

Plus wire, 1 amp fuse and holder, solder, case, printed circuit board if desired, etc.

Atari can open a world of computer-controlled precision movement. You can control a robot on wheels powered by stepper motors, using arms controlled by stepper motors, seeing with a scanner positioned by a stepper motor. And who knows what else?

In my own case, I've found that making the robot open the refrigerator door is easy, but how do I get it to take the tops off the bottles?

Scott Kilbourne is the Chief of Medical Photography at Southern Illinois University and president of the Lincolnland Atari Users' Group. Jon Holcomb is a Radiation Safety Technician at the Southern Illinois University School of Medicine. William Hall is Deputy Director of the Illinois Dept. of Children and Family Services. Bill Andrea provided some of the illustrations.

A

GATEWAY

Can you discover the secret of the "Gateway" to other worlds?

ANALOG Magazine

ANTIC Magazine

\$39.95 - ATARI ST - Color/Mono

Action Software
69 Clementina St.
San Francisco, CA 94105
(415) 974-6638
Mail orders: please include \$3.00 S&H and Calif. residents add \$2.60 sales tax. VISA, MC OK

CIRCLE 004 ON READER SERVICE CARD

START

THE ST QUARTERLY

PREMIERE ISSUE

See START Disk
Offer Inside

U.S.A. \$4.00
CANADA \$4.95

Summer 1986

Volume 1, Number 1

START NOW

Subscribe to STArt, the ST Quarterly now. In addition to 4 issues of STArt and four 3½" program disks, you will also receive—FREE—a full year (12 issues) of ANTIC which features the ST Resource every month. To subscribe use the handy order card to the right.

START AT THE BEGINNING

If you missed a previous issue, there are still copies available. For magazine plus 3½" disk, send \$14.95 plus \$2.00 shipping to:

STArt
524 Second St.
San Francisco,
California 94107



PROGRAM BY JOE BRZUSZEK
ARTICLE BY CHARLES JACKSON

Landscape Illusion

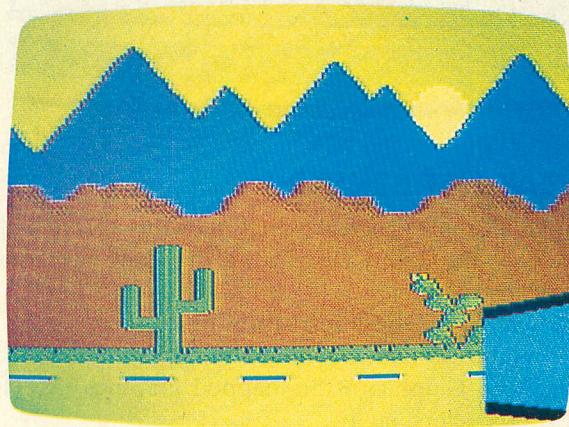
Take your Atari on a scrolling 3-D drive through the desert, complete with engine noises. The illusion of three-dimensional depth is surprisingly effective. This BASIC program works on all 8-bit Atari computers with at least 32K disk or 24K cassette.

This colorful optical illusion demonstrates parallax—the way objects appear to move when the viewer changes position. 3-D Landscape Illusion simulates driving through a desert where nearby objects seem to “move” faster than more distant objects. There are also engine sounds to help maintain the illusion.

Type in Listing 1, GOWEST.BAS, check it with TYPO II and SAVE a copy before you RUN it. If you have trouble typing the special characters in lines 210, 1010, 1030, 1100-1150, 1270-1280 and 1330-1350, don’t bother typing them in. Listing 2 will create them for you and write them to a file called GWLINES.LST. Once you’ve created this file, type NEW and LOAD Listing 1. Next, ENTER the file created by Listing 2 to complete the program. Remember to SAVE a copy of the merged program before you RUN it.

When you RUN 3-D Landscape Illusion, it creates a desert scene divided into three independently scrolling horizontal strips. The mountains are drawn in the

Landscape Illusion simulates motion by scrolling the foreground and background scenes at different rates.



top strip, which moves slowest. The hills occupy the center strip, which scrolls a little faster than the mountains. The road is the bottom strip and scrolls fastest of all.

The Sun and the car bumper are players and remain stationary. The Player/Missile priority selection register (GPRIOR, memory location 623) is set to 2, allowing the Sun to apparently “slip behind” the taller mountain peaks. This instruction is in line 170. continued on next page

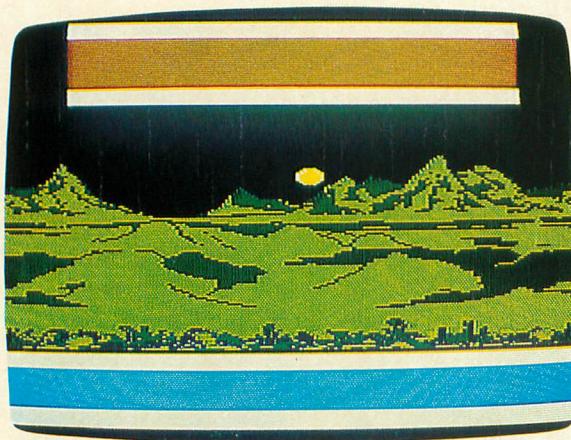
Scrolling scenery fools the eye

ANTIC MODE 4

The hills, mountains and the road are made of redefined characters, and displayed in ANTIC Mode 4 (Graphics 12 on XL and XE computers). This four-color character mode has the same horizontal resolution and twice the vertical resolution of Graphics 7—but requires less than a third as much memory.

Unlike other character modes, ANTIC Mode 4 characters were not meant to be formed into words and sentences. They're primarily used to generate detailed play-fields which use a minimum of memory. To design original games or other graphics with your own ANTIC 4 characters, you need a special character set editor such as INSTEDIT (\$15.95, The Catalog, AP0117).

Sub, a joystick-controlled illusion, simultaneously scrolls four horizontal scenery "strips."



DISPLAY LIST BENDER

A Display List is a program which tells the ANTIC chip how to draw the screen. Display lists may only have three types of instructions:

1. Where to get the information to display.
2. How the information should be displayed (Graphics 0 characters, Graphics 8 bit-mapped graphics, ANTIC Mode 4 characters, etc.)
3. Are there any special options (such as vertical or horizontal scrolling, or interrupts) to consider?

3-D Landscape Illusion constructs a special display list which extensively uses all three types of instructions. The Graphics 23 call in line 40 establishes a Graphics 7 display list, without a text window.

Routines in lines 120-140 change this display list into the special ANTIC 4 display list which handles all three scrolling strips, plus the background.

A display list interrupt (DLI) at the start of each strip controls its horizontal scrolling, and changes color values at the bottom of the screen. A Vertical Blank Interrupt (VBI) routine controls the DLI's timing, and handles coarse scrolling. These routines are called in lines 210 and 220.

DISK BONUS

This month, Antic Disk owners are treated to a second optical illusion. SUB.EXE is a machine language joystick-controlled scrolling demo for all 8-bit Atari computers. This smoothly detailed, unearthly landscape was programmed by Patrick Bass, Antic's ST Program Editor. To see SUB in action, choose Main Menu selection 1 to get into DOS and then [L]oad SUB.EXE from DOS Menu selection L.

The following books will teach you more about these advanced graphics techniques:

Atari Graphics and Arcade Game Design

By Jeffrey Stanton with Dan Pinal

477 pages

\$19.95, Antic Catalog, MG0103

Your Atari Computer

By Lon Poole

Osborne/McGraw-Hill

465 pages

\$17.95

Pennsylvanian Joe Brzuszek sent us this impressive graphics demo along with a letter explaining why he believes the 1/60th-second television screen refresh rate is not fast enough to meet the Antic Lightstick Challenge (July 1986, page 29).

Listing on page 105

A

MTS SOFTWARE
BIG PICTURE
HI-RES GRAPHICS

ARTIST UNLEASHED - Complements BIG PICTURE. Create graphics files and 2 sizes of character sets. \$39.95

MTS SOFTWARE **COMPUTER EYES** Converter \$ 9.95
P.O. Box 623 DATA DISKS \$14.95 ea.

DIRECT ORDERS ENCLOSE \$3 FOR SHIPPING. SPECIFY UPS OR 1ST CLASS MAIL. NY STATE ADD 8% TAX

THE LOWEST
PRICES

THE BEST
SERVICE

CALL (614) 864-9994 • P.O. Box 13428 • COLUMBUS, OHIO 43213

ATARI
COMPUTER
HARDWARE
65XE COMPUTER 69.99
800XL COMPUTER 69.99
130XE COMPUTER 119.99

ATARI 1050
DISK DRIVE 124.99
INDUS G.T. 199.99
ASTRA (THE ONE) 249.99

PRINTERS

STAR NX10 239.99
STAR GG15 269.99
STAR POWER TYPE 369.99
PANASONIC 1080 199.99
PANASONIC 1091 229.99
EPSON LX80 229.99
TRACTOR (LX80) 24.99
ATARI 1027 99.99

INTERFACES

MPP MICRO PRINT 26.99
MPP 1150 39.99
XETEC 39.99

ATARI HARDWARE
ACCESSORIES

US DOUBLE 49.99
P.R. CONNECTION 59.99
CABLES 19.99
1030 MODEM 44.99
XM 301 MODEM 39.99
SUPRA 1000E MODEM 39.99
850 INTERFACE 99.99



ATARI COMPUTER
SOFTWARE
ALL ON CARTRIDGE
PAC MAN 3.99
STAR RAIDERS 3.99
ASTEROIDS 4.99
QIX 4.99
DEFENDER 4.99
MUSIC COMPOSER 4.99
JUMP MAN JR. 4.99
MINER 2049ER 4.99
E.T. 4.99
BASIC CART 4.99
MISSILE COMMAND 4.99
DONKEY KONG 4.99
HERO 4.99
SUPER BREAKOUT 4.99
MEGAMANIA 4.99
SPACE INVADERS 6.99
ZENGI 6.99
RIVER RAID 8.99
BASKETBALL 8.99
PITFALL 8.99
PITFALL II 8.99
ROBOTRON 8.99
DESIGNER PENCIL 8.99
SUPER COBRA 8.99
SKY WRITER 8.99

ATARI COMPUTER
SOFTWARE

WORLD KARATE 17.99
KARATEKA 19.99
SUPER BOULDER DASH 19.99
TOUCHDOWN 11.99
FOOTBALL 11.99
RACING DESTRUCTION 11.99
ARCHON 11.99
7 CITIES GOLD 11.99
MUSIC CONSTRUCT 11.99
ONE ON ONE 11.99
MURDER 11.99
STAR RAIDERS II 17.99
HOME PLANETARIUM 24.99
SNY FILE 29.99
SYN CALC 29.99
ACTION 44.99
BASIC XL 34.99
BASIC XE 44.99
SILENT SERVICE 22.99
ULTIMA II 19.99
TEMPLE OF AP SHA 7.99
MICRO LEAGUE 22.99
BASEBALL 24.99
COMPUTER BASEBALL 24.99
GAME STAR BASEBALL 17.99
HOME FILING MANAGER 7.99
TIME WISE 3.99
ATARI LAB 24.99
STARTER SET 24.99
ATARI LAB LIGHT 19.99
ATARI WRITER 22.99

ATARI
S.T.
COMPUTER
COLOR
SYSTEM
• KEYBOARD
• S/S DISK DRIVE
• COLOR MONITOR

76800

B/W
SYSTEM
56800

SOFTWARE

LEADER BOARD 24.99
MEAN 18 24.99
SILENT SERVICE 24.99
WINTER GAMES 24.99
VIP 99.99
VIP LIGHT 69.99
PERSONAL PASCAL 44.99
DB MAN 69.99
ZOOM RACKS 44.99
MUSIC STUDIO 34.99
EASY DRAW 99.99
N-VISION 24.99
DEGAS 19.99
ULTIMA II 29.99
HEX 24.99
SUPER HUEY 24.99
STRIP POKER 24.99
KINGS QUEST II 29.99
COPY II 24.99
PRINT MASTER 29.99
AVATEC 29.99
MODEM 7699

VIDEO GAMES

ATARI
2600
VIDEO GAMES

2600 JR. 39.99
GAME SYSTEM 6.99 ea.
JOY STICKS 6.99 ea.
SWITCH BOX 3.99
POWER SUPPLY 5.99
2600 GAME CARTS
COMBAT 3.99
FANTASTIC VOYAGE 3.99
SHOOTING GALLERY 3.99
STAR VOYAGER 3.99
DRAGON FIRE 3.99
FOOTBALL 3.99
ASTEROIDS 3.99
VENTURE 4.99
FANTASTIC VOYAGE 4.99
PLAQUE ATTACK 4.99
SOLOR FOX 5.99
REAL SPORT BASEBALL 3.99
OINK 5.99
OUTLAW 5.99
CHALLENGE FOOTBALL 5.99
CHALLENGE BASEBALL 5.99
MASH 7.99
Q-BERT 7.99
FUN W/NUMBERS 7.99
AIR RAIDERS 7.99
BACHELOR PARTY 9.99
BEAT EM & EAT EM 9.99

ATARI
2600
VIDEO GAMES

2600 GAME CARTS
POPEYE 7.99
MOON PATROL 9.99
MARIO BROS. 9.99
CENTIPEDE 9.99
MILLIPEDE 9.99
STARGATE 9.99
POLE POSITION 9.99
MS. PAC MAN 9.99
PAC MAN 9.99
BATTLE ZONE 9.99
TAZ 9.99
KANGAROO 9.99
GALAXIAN 9.99
SPACE SHUTTLE 9.99
CRYSTAL CASTLES 9.99
SOLARIS 9.99
MIDNIGHT MAGIC 9.99
PAC MAN JR. 9.99
HE MAN 9.99
THUNDER CASTLE 9.99
TREASURE TARMIN 9.99
DIG DUG 9.99
GREMLINS 9.99
JOUST 9.99
BASKETBALL 9.99
JUNGLE HUNT 9.99
GRAVITAR 9.99
TRACK & FIELD 15.99

ATARI
7800
VIDEO GAMES

7800
GAME
SYSTEM
6999
(PLAYS ALL 2600 CARTS)
CENTIPEDE 9.99
DELUXE ASTEROIDS 9.99
DIG DUG 9.99
FOOD FIGHT 9.99
GALAGA 9.99
JOUST 9.99
MS. PAC MAN 9.99
ROBOTRON 9.99
XEVIOUS 9.99
BALL BAZER 9.99
DESERT FALCON 9.99
CHOPLIFTER 14.99
KARATEKA 14.99
TOUCHDOWN 14.99
FOOTBALL 14.99
ONE BASKETBALL 14.99
SKY FOX 14.99
SUMMER GAMES 14.99
GATO 14.99
SUPER HUEY 14.99
HATTRICK 14.99
DEMOLITION DEPOT 14.99

INTELLIVISION
VIDEO GAMES

REFURBISH
INTELLIVISION II
GAME
SYSTEM
90-DAY WARRANTY
INTELLIVISION III
(NEW)

5999

SOCER 6.99
SKIING 6.99
SEA BATTLE 6.99
FOOTBALL 6.99
BASEBALL 6.99
DUNGEON & DRAGONS 6.99
SUB HUNT 6.99
MOTOR CROSS 6.99
SNA FU 6.99
TRIPLE ACTION 6.99
HE MAN 6.99
BURGER TIME 6.99

MORE — CALL FOR
THE NEW TITLES

QUANTITIES & TITLES DO CHANGE DAILY — CALL FOR TITLE
NINTENDO GAME SYSTEM 119.99 — ATARI 5200 — COLECOVISION
CALL FOR NINTENDO CARTS

HOW TO ORDER: CASHIER CHECK, MONEY ORDER, MASTERCARD* OR VISA* (ADD 4% FOR CHARGE CARDS) . . . NO PERSONAL CHECKS . . . NO C.O.D.'S . . . SHIPPED
U.P.S. . . . ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

SHIPPING: ADD \$3.00 ON ALL ORDERS UNDER \$100.00 . . . ADD \$5.00 ON ALL ORDERS OVER \$100.00. ACTUAL FREIGHT CHARGED ON MULTIPLE ORDERS.

INTERNATIONAL: ACTUAL FREIGHT CHARGED ON ALL ORDERS OUTSIDE THE CONTINENTAL UNITED STATES INCLUDING A.P.O.

POLICIES: NO RETURNS WITHOUT A RETURN AUTHORIZATION . . . NO RETURNS UNLESS DEFECTIVE. ALL DEFECTIVES WILL BE EXCHANGED . . . NO EXCEPTIONS.
PLEASE SPECIFY . . .

CALL OR WRITE FOR FREE CATALOG

CALL ELECTRONIC ONE (614) 864-9994

P.O. BOX 13428 COLUMBUS, OHIO 43213

Antic® 8-Bit

PRACTICAL PROGRAM ★★ CONTEST ★★

First Prize Atari 1040ST Computer (Provided by Michtron)

Plus \$500 worth of Batteries Included ST software

Three Runner-Up Prizes; Antic 1-Year Disk Subscriptions

Also, any entries (including prizewinners) accepted by Antic Magazine will be paid at our standard authors' rate, upon publication.

HOW TO WIN

We are looking for the most powerful, versatile, easy-to-operate programs that perform useful jobs in the real world. The more uses for your software, the better. For example, a stuffed-animal database for taxidermists would probably be considered too specialized by the magazine's judges—no matter how excellently it is programmed.

The winning software must be user-friendly, most likely menu-driven wherever possible. Users should not need programming knowledge in order to successfully operate the application programs.

Please note that some of the other popular Atari program categories—such as utility routines that add power when inserted into your own programs—cannot properly be considered applications. Practical application programs should be complete, stand-alone software that does an entire user-controlled job from start to finish. For example, a drawing or painting program would be a practical application—a colorful graphics demo would not!

TECHNICAL RULES

Programs
must run on

more than 48K memory. However, programs that *also* take advantage of the extra memory in the 130XE will be given preference.

Programs must be written in standard renumberable Atari BASIC or MAC/65 assembly language, under a disk operating system compatible with Atari DOS 2 or 2.5. Program listings cannot be larger than 150 sectors of a single-density disk.

Thorough error-trapping is very important. Your program should not crash every time a user accidentally presses the wrong key. And please do not include authors' copyright statements in your listing.

JUNE 15, 1987

All entries in the Antic 8-Bit Practical Applications Competition must be received by June 15, 1987. Winners will be announced in the November, 1987 issue of Antic. Judges' decisions are final.

Entries—programs and accompanying articles—should be submitted on disk *and* in printout. Entries will be returned only if the author provides a stamped, self-addressed envelope.

Send entries to:

Practical Applications Competition

Antic Magazine

524 Second Street

San Francisco, CA 94107

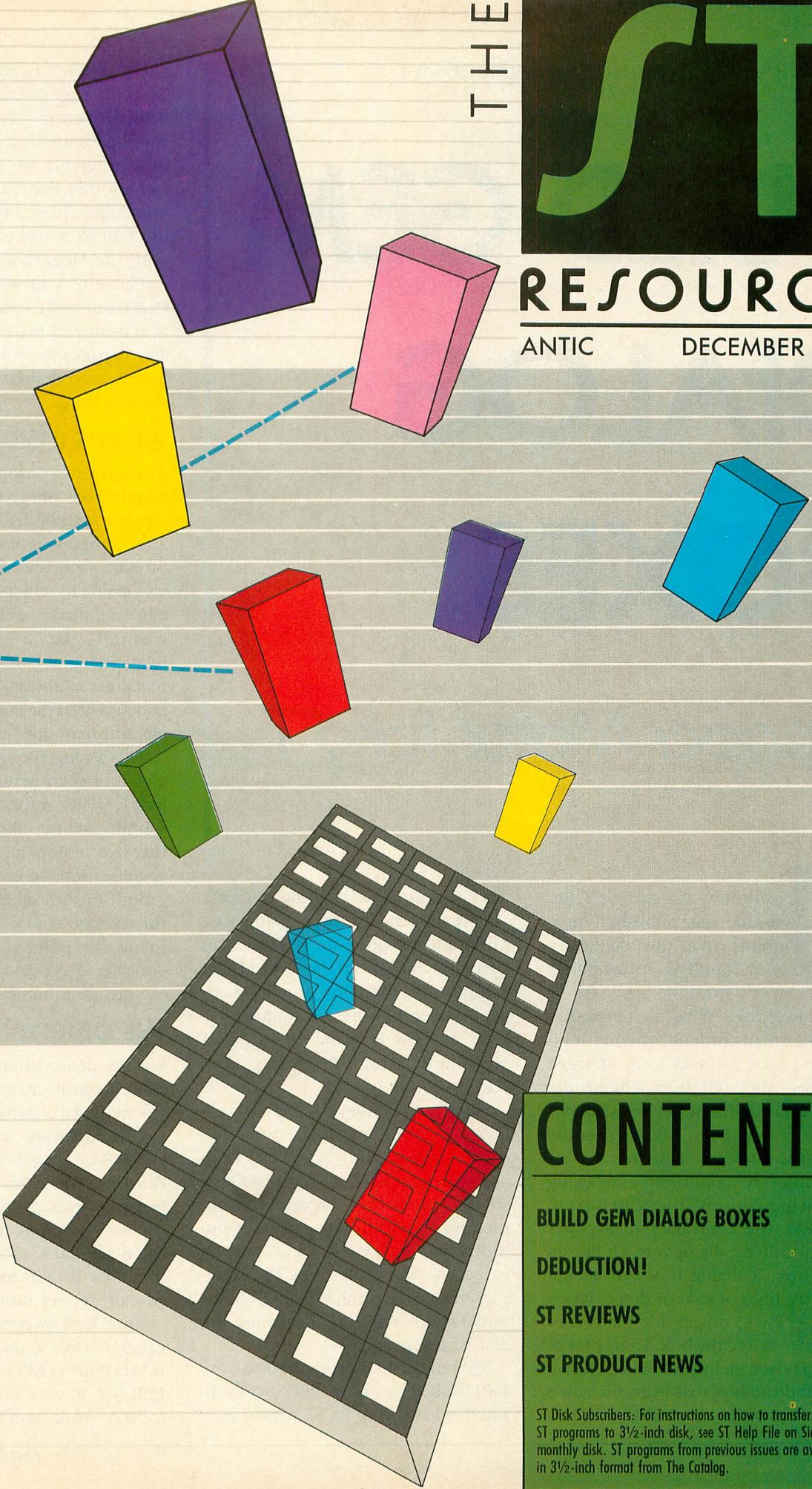
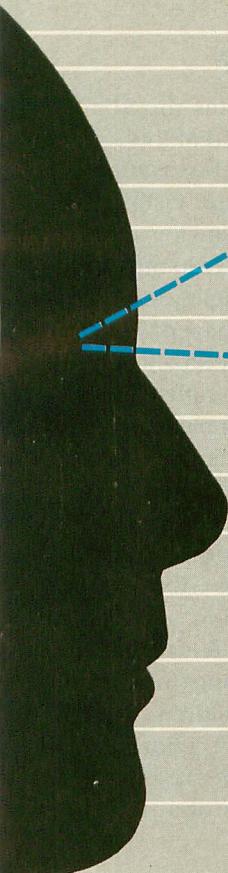
All 8-bit practical application programs accepted for publication by Antic between November 1, 1986 and June 15, 1987 will also be automatically evaluated as potential prizewinners in the contest.

the Atari 800, 800XL and 65XE models and require no

THE **ST**
RESOURCE

ANTIC

DECEMBER 1986



CONTENTS

BUILD GEM DIALOG BOXES	72
DEDUCTION!	89
ST REVIEWS	95
ST PRODUCT NEWS	99

ST Disk Subscribers: For instructions on how to transfer **Antic** ST programs to 3½-inch disk, see ST Help File on Side B of monthly disk. ST programs from previous issues are available in 3½-inch format from **The Catalog**.

BUILD GEM DIALOG BOXES

Stepper Motor for ST

Up to now, the **Antic** ST Resource has published programs that got necessary user-supplied information either directly from the keyboard or from alert boxes. While alert boxes are fine for small amounts of communication, such as "pick one of three choices," they fall short when more detail is needed. The keyboard allows for more detail, but isn't as friendly the GEM interface standard.

People are comfortable working with paper "forms" they can fill out. In GEM, the equivalent of a paper form is called a dialog box. Unlike an alert box, a dialog box can accept multiple lines of text, or detect when the user clicks on graphic buttons or switches inside the box. Examples of dialog boxes include the File Selector Box and the box that pops up when you "show info" on a disk or file.

This month, we're going to create and manipulate our own dialog box. Although the program is written in DRI's Alcyon C from the Atari ST Developers Kit, the same principles apply for users of other ST languages—such as OSS Personal Pascal, TDI Modula-2 and Prospero Pro Fortran-77.

Since we're using Alcyon C, we'll create it using one of the three Resource Construction Sets (RCS) available. Resources are collections of text strings, rectangle descriptions and pictures which are kept separate from individual programs. Thus anyone can come along later and, for example, change the program's English text into French *without* disturbing the rest of the program.

Two of the RCS programs are from DRI itself. The original RCS was supplied with the Atari ST Developers

Kit, and RCS 2.1 can be downloaded from the CompuServe SIG *Atari Developers Forum. The third is the RCS supplied with MegaMax C. All three RCS programs are compatible with one another. For example, this means you could create a resource file with the DRI RCS and edit the same file with the MegaMax RCS.

Those of you with OSS Personal Pascal can easily create these resource files from within a running program. The C packages, however, make this feature too cumbersome for demonstration here.

WHAT'S INSIDE?

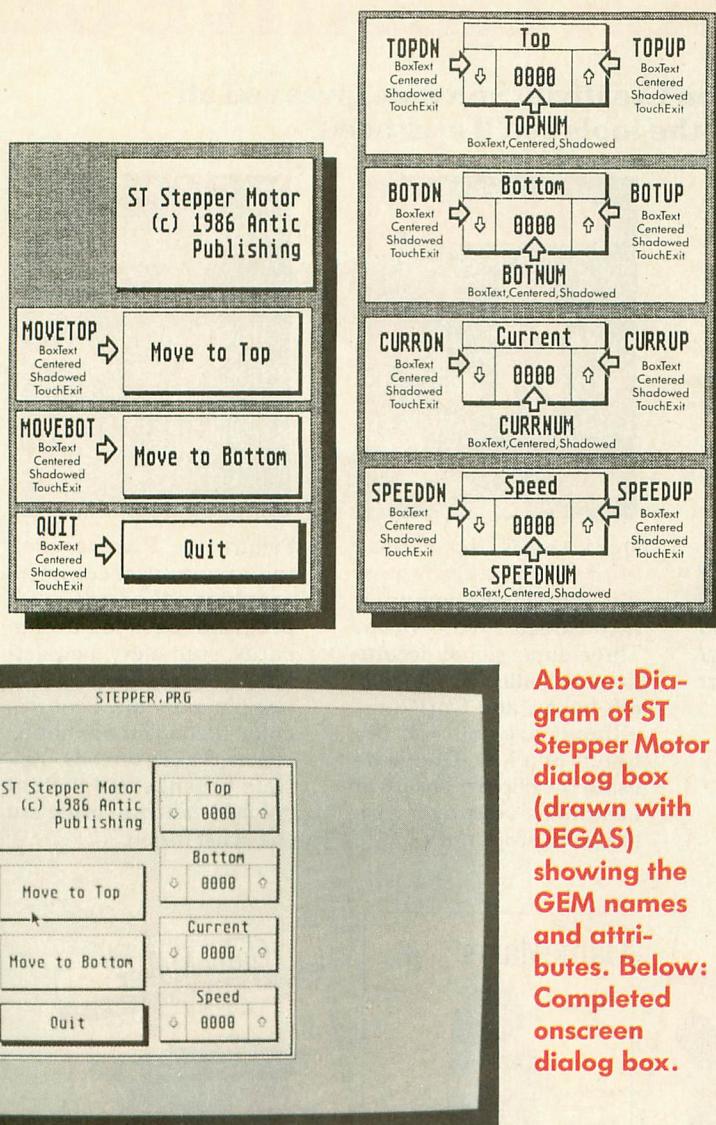
Anybody who programs the ST for awhile finds out that GEM loves rectangles. A GEM dialog box is *always* a rectangle—whether visible or invisible—and holds smaller rectangles inside it, which may in turn contain even smaller rectangles. This is explained as a "parent/child" relationship, where the smaller child rectangle is always completely contained within the larger parent rectangle and may not overlap.

This arrangement of nested rectangles is also known as a "tree of objects". The information structure within each tree allows GEM to track the size, color, location and other specifications of each rectangle. The "root" of the tree points to each of the parent root's children, which themselves point to any children they contain, etc. Visualize this relationship as spreading branches of a tree.

THE OBJECTIVE

For the demonstration program this month, we'll create a dialog box—resembling a control panel—to operate the hardware described in this issue's 8-bit *Stepper Motor Robot-Controller* article. The GEM dialog box performs the same functions as the keyboard-operated program for the 8-bit Ataris. (You'll need to read the 8-bit article to understand the overall stepper motor project.)

Antic Disk owners can LinkLine the program over to their STs right away. LOAD both STEPPER.PRG and STEPPER.RSC to your ST. For the program to fully work, you need to build the



interface board described in the 8-bit stepper motor story. However, if you just want to study the programming of ST dialog boxes, this program will run only if you have your printer connected and online.

If you don't have this month's Antic Disk, carefully type in Listing 1 STEPPER.C, and SAVE a copy to disk. Compile and assemble this C source code down into a .o file, and then link it to **apstart**, with **aesbind**, **vdibind**, **osbind**, and **libf** trailing along behind. **Relmod** the resulting .68K file into a .prg file and you're half finished. We now need to create our resource file.

BUILDING A RESOURCE

Figure 1 is a picture (drawn with DEGAS) of the dialog box created for the ST Stepper Motor program. Using your Resource Construction Set to re-

produce the rectangle sizes exactly as shown is not important. The important thing is that you correctly *name* each of the objects and correctly set their individual *attributes*. For example, let's look closely at the four objects at the upper right of the dialog box—these objects combine to form a controller for the way we change and monitor the top location of the camera platform.

There are three smaller boxes below a full-width box that contains the word "Top" inside it. Of the lower three boxes, the center one has a four-digit number in it and the two flanking boxes contain a down and an up arrow. All four object boxes are of type **BoxText**, and are **shadowed** and **centered**. The two arrow objects are also **touchexits**. The main difference between them is their *names*.

The "Top" box has no name, be-

cause it's only there as a title. The up arrow box is named **TOPUP**, the down arrow is named **TOPDN** and the number is named **TOPNUM**. Each object has its own unique number, so we can use these names just like declared constants when we later need to determine which object we are dealing with. When you're finished creating your new resource, save it to disk. The Resource Construction Set will automatically create a .h header file for inclusion with your C program, containing all the names for the parents and children, along with their object numbers.

For example, because the up arrow object is a **touchexit**, when the program runs and we interact with the dialog box we will receive the number of the up arrow object—**TOPUP**—whenever the user presses the left mouse button while pointing at that object. We can test for the number of the object which caused the exit from the dialog box and act accordingly. In this case, getting the object number **TOPUP** from the dialog box directs us to increment the **TOP** number by one.

SAVING A RESOURCE

Finish creating your new dialog box using your RCS and the example in Figure 1. Save it to disk using the name STEPPER. When you examine the directory for that disk, you'll find the RCS has created at least three files:

1. **.RSC** file—the resource itself.

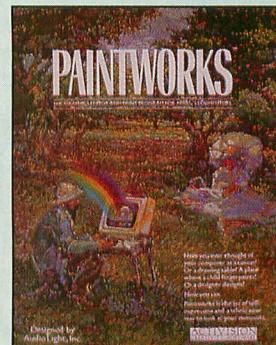
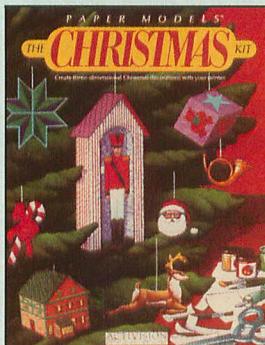
2. **.H** file—contains the names and object numbers. This file is for C programs only, but the RCS from Digital Research can also create files compatible with Pascal or Fortran-77.

3. **.DEF** file—tracks how different trees in a single resource are classified. Categories are dialog boxes, menus, free strings, or unknown. This file is only needed when you reopen a resource file for editing. You can edit a resource *without* the **.DEF** file, but you must reclassify all trees inside the resource file itself. Incidentally, RCS 2.1 creates a **.DFN** file, which works the same way.

When the resource is created, you can run STEPPER.PRG by just double-clicking on its icon. The program will

UNLEASH YOUR CREATIVE GENIUS

Activision Creativity Software gives you all the tools you'll ever need.

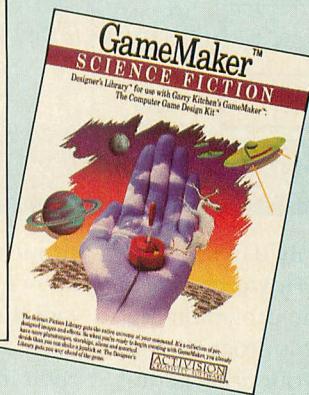
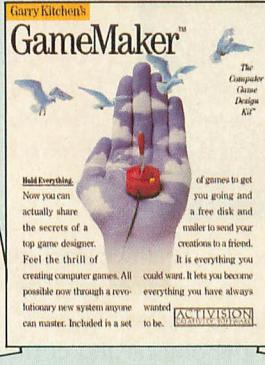
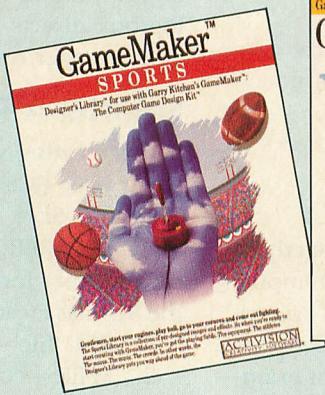


Like **The Music Studio**.™ Compose and edit any musical score quickly and easily using features and power unmatched by other music programs. Mozart never had it so good!

Ask your retailer
about our
HOT HOLIDAY OFFERS
worth \$245.

Deck the halls! **Paper Models**™: **The Christmas Kit**™ turns your computer into Santa's workshop. Three-dimensional decorations including ornaments, gift boxes, and Christmas villages are yours at the touch of a key. Decorate using the clip-art library or customize your own with the paint program.

Picture this. **Paintworks**™, the easy-to-use, complete graphics editor and paint program. Lets you design cards, stationery, newsletters, musical slideshows, or just plain doodle. Features color cycling for animation effects, 3 work screens, multiple brushes and instant color blending to bring out the artist in you.



Have a great idea for a game? With Garry Kitchen's **GameMaker**™: **The Computer Game Design Kit**™, you can create computer games using 5 professional quality design tools in one easy-to-use program. Or get a head start with pre-designed images and effects. The **GameMaker Designer's Sports Library**™ lets you create your favorite sports games from football and baseball to skiing and auto racing, easily and quickly. With the **GameMaker Designer's Science Fiction Library**™, you can create a whole new world, full of spaceships, planets, galaxies, aliens and more. Both libraries for use with Garry Kitchen's GameMaker.

ACTIVISION CREATIVITY SOFTWARE LETS THE CREATIVE GENIUS IN YOU SHINE THROUGH.

ACTIVISION
CREATIVITY SOFTWARE®

For Commodore 64 and 128, Amiga, Apple II series, Atari 800/XE/XL/ST, IBM PC, PCjr, Tandy 1000, Macintosh, and Apple IIgs computers. NOT ALL PROGRAMS AVAILABLE ON ALL SYSTEMS.

search for, and load, the STEP-
PER.RSC file, presenting it for interaction. Let's examine the program in detail.

PROGRAM TAKE-APART

This program is written in the original Alcyon C contained in the Developers kit. It is *not* the new Version 4.14. We'll switch when we learn that enough readers have access to Version 4.14. Those of you with MegaMax C should find little problem in converting this program—basically just substitute `sprintf()` for the published program's `ftoa()`. Lattice C and Mark Williams C owners are also encouraged to try.

The top few lines contain remarks for the title and version date. Right below, we `#include` the `stepper.h` file constructed by the RCS and the stock `osbind.h` that everybody knows and loves.

Next come `#defines`, where we redefine some funny C operators into understandable words. The last three lines construct `LWGET(x)`, which functions like an inline `PEEK` statement for words, and `OB_W / OB_H`, which will allow us to get the width and height of object rectangles when we update them.

Below the `#defines` are definitions for `OBJECT` and `TEDINFO` structures. Structures are a convention in C to relate different sizes of data into an easily accessed form. They are similar to Pascal RECORDS.

Below the structure definitions come the global variable declarations including the 16-bit `ints`, the 8-bit `chars`, and the 32-bit `longs`.

Now we start our program logic. In `main()`, which every C program *must* have, we describe the program's operation briefly. Here, we `initialize()` the application, then `move_the stepper_motor()`, and `repeat` this action `while(not finished)`. When we finally get `finished`—when `finished` sets TRUE—we'll `terminate()` this application and return to the desktop.

INITIALIZATION

Initialization here hooks our program into GEM and gets our application

"handle." Then it opens a virtual workstation that returns a world of information about the type of terminal we're on, in the array `workout[]`.

The first of two new calls, `rsrcload()`, when given the path/filename of the needed resource file, will determine how big the resource is, reserve enough memory, and then load the resource into the just-reserved memory section. The second call, `rsrclgaddr()`, will return the long address of the memory location holding the root of the desired tree.

From here we can search the tree for any desired object within. Before we leave the initialization function, we set `a`, `b`, `c`, and `d`—which match the function and value of `a`, `b`, `c`, and `d` in the 8-bit Atari program—to their proper port bit-pattern values. Then we force the mouse pointer sprite back to a pointing arrow, and set `finished` to FALSE, because we haven't finished the program yet.

MOVING THE MOTOR

In `move_the stepper_motor()`, we have the major block of code for interacting with our dialog box. The

forms library call: `form_center()` will figure out the screen position to center the dialog box (based on the size of the dialog) and return them to the variables `xdial`, `ydial`, `wdial`, and `hdial`. The next call, `find_box_sizes()`, computes the clipping rectangle needed for each numeric display inside our dialog.

`form_dial(0...)` saves for later redrawing a copy of the screen portion covered up by the dialog box. `form_dial(1...)` draws the "growing box" display from size `x`, `y`, `w`, `h` to size `xdial`, `ydial`, `wdial`, `hdial`.

We draw our dialog box on the screen with the `objc_draw()` call, which needs to be told the location of the ROOT of the tree to be drawn (`box_address`), which object to draw (`TREE1`), how many children deep to draw (2), and the largest clipping rectangle expected, (`x`, `y`, `w`, and `hdial`).

We now begin interaction with the displayed dialog. The `form_do()` call needs the ROOT of the tree to interact with, and the number of the editable text field (TEDINFO) on which to place the cursor when the

continued on page 87

THE ATARI TEN COMMANDMENTS

III

"We shall create a computer that sets a new standard for speed and performance." *Jack Tramiel*
ATARI CORP.

The revolutionary 1040ST™ has a sizzling clock speed of 8 MHz that the competition just can't touch. And the more speed your computer has, the less time you'll waste waiting for it to do its job.

It's what you would expect from a system driven by a powerful 68000 microprocessor.

Similarly, the 1040ST delivers one Megabyte of memory for you to work with, which is two to four times more than our competitors deliver.

And we've succeeded in creating this amazing combination of speed and performance for the incredibly low price of just \$999.

Which means the 1040ST sets new standards for speed, performance and price!

The ATARI 1040ST is at your computer retailer now.

ATARI

© 1986, Atari Corp. ATARI and 1040ST are TM's or reg. TM's of Atari Corp.

CIRCLE 008 ON READER SERVICE CARD

BEST BUY ON SMALL QUANTITIES

COLORED DISKS AS LOW AS 69¢ EA. - FLOPPY DISKS AS LOW AS 39¢ EA.

5 1/4"	Black Generic Bulk	Colored Generic Bulk
BULK	SS/DD	SS/DD
20-69	.59 ea.	.69 ea.
70+	.49 ea.	.59 ea.

ATARI SOFTWARE - 8 BIT

Star Raiders II 17
Atariwriter Plus 39
Learning Phone 19
Proofreader 14
Silent Butler 19

ACCESS

Beachhead II 26
Raid over Moscow 26

ACCOLADE

Hardball 20
Fight Night 20

ACTIVISION

Music Studio 23
Mindshadow 17
On-Track Racing 17

BATTERIES INCLUDED

Paperclip w/ Spellpak 41
Homepak 35

BRODERBUND

Printshop 29
Printshop Companion 26
Printshop Graphics Library 1,2,3, (ea) 17

DATASOFT

Crosscheck 20
Never Ending Story 20

ELECTRONIC ARTS

Racing Destruction Set 11
Super Boulder Dash 11
Chessmaster 2000 28
Touchdown Football 28

MICROPROSE

Conflict in Vietnam 26
Silent Service 23
F-15 Strike Eagle 23
Kennedy Approach 23

OSS

Action 49
Action Tool Kit 19
Basic XL 38
Basic XL Tool Kit 19
DOS XL 19
Basic XE 49
Mac 65 49
Mac 65 Tool Kit 19

SYNAPSE

Syn-File 33
Syn-Calc 33

X-LENT

Typesetter 23
Rubber Stamp 21
Page Designer 21
Megafont 17
Word Processor 21
P.S. Interface 21
Miniature Golf Construction Set 21

STAR MICRONICS

NX-10 269
SG-15 399
LV-1210 189

PANASONIC PRINTERS

KX-1091 239
KX-3131 259
KX-1092 319

PRINTER INTERFACE CABLES

Microprint 29
1150 Parallel Int. 39
Micro Stuffer 59

PRINTER RIBBONS

Gemini Printers (Black) 3
Gemini Printers (Blue/Red/Purple/Green/Brown) 4

Epson (80 Series) Blk 6

Epson (Color) 8

Panasonic Printers (Black) 9

Panasonic Printers (Color) 10

MONITORS

Thompson Color Comp. 139
Samsung Grn./Amber 69

Monitor Cable 7

MODEMS

Atari XM-301 45
Supra 300 AT 39
Avatex (300/1200 Baud) 99
Compuserve Starter 24
Supra 300 ST 59
Supra 1200 ST 149
Haba 1200 114

ICD

P:R: Connection 59
US Doubler/Sparta DOS 49

US Doubler without Sparta DOS 29

R-Time 8 49

Rambo XL 29

Sparta DOS 29

Construction Set 29

Multi I/O Board (256K) 179

UPGRADES/ACCESSORIES

Flip N' File 10 4

Disk Bank/5 12

Disk Coupler (Notch) 6

Disk Cleaning Kit (5 1/4") 15

Disk Cleaning Kit (3 1/2") 15

Dust Covers Call

Happy Enhancement 139

Monitor Stands 12

Joysticks (Pair) 13

Printer Stand 14

3 1/2"	Sony	Sony
Bulk	SS/DD	DS/DD
10-29	1.39 ea.	1.99 ea.
30+	1.29 ea.	1.89 ea.

ATARI 520 ST SOFTWARE

CP/M Emulator 34
Home Planetarium 24

BATTERIES INCLUDED

I/S Talk 53
Degas 26
Timelink 33
Thunder 26

HIPPOPOTAMUS

Computer Almanac 23
Joke & Quotes 23
Disk Utilities 33
Ramdisk 23
Hippospell 27
Backgammon 27
Hippoword 59
Hippoconcept 59
Hippopixel 27
Hippovision B & W 105

MICHTRON

Utilities 39
M-Disk 26
Mudpies 26
Soft Spool 26
Animator 26
Calendar 19
Mi-Term 33
Corberman 33
Time Bandit 26
Major Motion 26

ANTIC

Maps and Legends 27
Macro Assembler 60
Meta Pascal 75
Lattice C 114
A-Calc 45
Cad-3D 38
A-Ram 15
Expert Opinion 75
Flash 30

OSS

Personal Pascal 50

UNISON WORLD

Printmaster 26
Art Gallery I 19
Art Gallery II 19

VIP TECHNOLOGIES

VIP (Lotus1-2-3 Type) 89

XLENT

Typesetter 25
Rubber Stamp 25
Music Box 32
Megafont 25

SHANNER PRODUCTS

LCM-2000 Clock 33
Macro-Manager 49
Shanner Planner 29
Easel 14
Disc Directory 20

3 1/2"	Sony	Sony
Box (5)	SS/DD	DS/DD
2-6	9 Bx.	14 Bx.
7+	8 Bx.	13 Bx.

CALL FOR SOFTWARE: 520 ST Software

Holmes & Duckworth	Mark of the Unicorn
SST Systems	Infocom
Quickview	Activision
Central Point	Academy
Audio Light	Dragon Group
Haba	MI-Graph
Sierra	TDI
Quantum Micro	Electronic Arts
Philon	Spinnaker
Epyz	SST
Firebird	Regent
Priority	Quickview
Action	Unicorn
Beckmeyer	Penguin
Omnitrends	Polarware
Telarium	Microware

CALL FOR PRICES: Atari 8-Bit

Avalon Hill	Sub-Logic
Epyz	Micro-League
First Star	Infocom
Origin	Artworx
Sierra	Continental
SSI	

ATARI 520 ST HARDWARE: CALL

Package #1

Atari 520 ST Computer & SF 354 Disk Drive

Package #2

Atari 520 Computer, SF 354 Disk Drive and SM 124 Monochrome Monitor

Package #3

Atari 520 ST Computer, SF 314 Disk Drive and SM 124 Monochrome Monitor

Package #4

Atari 520 ST Computer, SF 354 Disk Drive and SC 1224 Color Monitor

Package #5

Atari 520 ST Computer, SF 314 Disk Drive and SC 1224 Color Monitor

Package #6

1040 ST Mono System

Package #7

1040 ST Color System

CALL FOR PACKAGE PRICES

SF 354 SS/DD Disk Drive	.....	Call
SF 314 DS/DD Disk Drive	.....	Call
SM 124 Monochrome Monitor	.....	Call
SC 1224 Color Monitor	.....	Call
SHD 204 20 MG Hard Disk	.....	Call

Abacus Books for ST

\$16

To order call TOLL FREE

1-800-824-7506

ORDER LINE ONLY



COMPUTER CREATIONS, Inc.

P.O. BOX 493 - DAYTON, OHIO 45459

For information, order inquiries, or for Ohio orders (513) 435-6868



Order lines Open 9:00 a.m. to 8:00 p.m. Mon.-Fri.; 10 a.m. to 4:00 p.m. Sat. (Eastern Standard Time). Minimum \$15 per order. C.O.D. (add \$3.00). Please specify computer system. Call toll free number to verify prices and availability. Prices and availability are subject to change without notice. We ship C.O.D. to Continental U.S. addresses only! Please include 4% shipping on all hardware orders (min. \$4.00). Software and accessories add \$3.00 shipping and handling in continental U.S. Actual freight will be charged outside U.S. to include Canada, Alaska, Hawaii, Puerto Rico and APO. Ohio residents add 6 1/2% sales tax. Canadian orders add 5% shipping, (min. \$5.00). All other foreign orders, please add 15% shipping, (min. \$10). For immediate delivery send cashier's check, money order or direct bank transfers. Personal and company checks allow 3 weeks to clear. School purchase orders welcome. Due to our low prices, all sales are final. NO CREDITS. All defective returns must have a return authorization number. Please call (513) 435-6868 to obtain an RA# or your return will not be accepted for replacement or repair. FOR YOUR PROTECTION WE CHECK FOR CREDIT CARD FRAUD. We do not bill until we ship.

ProCopy

ST BACKUP UTILITY \$34.95

- ★ Duplicate virtually any disk
- ★ ProCopy works with all ST, S/S & D/S floppy disk drives
- ★ Updating policy: \$10 with return
- ★ Protects against accidental loss of expensive software
- ★ Not copy protected

You can't back up your investment because copy protection locks you out. **ProCopy** is the key!

Send \$34.95 (check or money order). VISA & MC accepted. Add \$2.00 shipping & handling in North America. Overseas shipping & handling add \$4.50. Dealer inquiries welcome.



PROCO PRODUCTS

P.O. BOX 665, CHEPACHET, RHODE ISLAND 02814 USA
For ordering only, call: (800) 843-1223

For information, call: (401) 568-8459

CIRCLE 053 ON READER SERVICE CARD

520ST RAM UPGRADE BOARDS

- FITS UNDER RF SHIELD
- ONLY 3 SOLDER CONNECTIONS
- DO IT YOURSELF INSTALLATION
- 100% 1040ST MEMORY COMPATABILITY
- ★ 0K BOARD YOU SUPPLY RAM . . 129.95
- ★ 512K BOARD 174.95

Send check or money order to:

DIVERSE DATA PRODUCTS, INC.

1805 Northeast 164 Street
N. Miami Beach, Florida 33162
(305) 940-0458
(305) 940-4763

or see your local dealer.

Out of country order add \$10. shipping
Use Int. money order payable in U.S. funds
Florida residents add 5/tax

520ST & 1040ST ARE TRADE MARKS OF ATARI CORP.

CIRCLE 025 ON READER SERVICE CARD

THE AMAZING
VOICE MASTER
SPEECH SYNTHESIS—VOICE RECOGNITION
plus a whole lot more!



Your computer can talk in your own voice. Not a synthesizer but a true digitizer that records your natural voice quality—and in any language or accent. Words and phrases can be expanded without limit from disk. Speech Editor program alters or improves sounds.

And it will understand what you say. A real word recognizer for groups of 32 words or phrases with unlimited expansion from disk memory. Speech playback and word recognition can work together. Have a two way conversation with your computer!

Easy for the beginning programmer with new BASIC commands. Machine language programs and memory locations for the more experienced software author.

Exciting Music Bonus lets you hum or whistle to write and perform. Notes literally scroll by as you hum! Your composition can be edited, saved, and printed out. You don't have to know one note from another in order to write and compose!

Based upon new technologies invented by COVOX. One low price buys you the complete system. Includes a host of sample programs! In addition, you will receive periodic information about speech technology, applications, new products, up-dates, and user contributions. You will never find a better value for your computer.

ONLY \$89.95 includes all hardware and software.

Available from your dealer or by mail. When ordering by mail add \$4.00 shipping and handling (\$10.00 foreign, \$6.00 Canada).

The Voice Master is available for the Commodore 64, 128, Apple IIc, IIe, II+, and Atari 800, 800XL, 130XE. Specify model when ordering. Apple II+ (with 64K) owners must have joystick adapter. Available from Covox at only \$9.95.

Apple IIe and II+ owners: Enhance speech quality and music capabilities with optional Sound Master hardware card. Installs in slot 4 or 5. Available separately for \$39.95 with demo software, or order with Voice Master for only \$119.95 (saves \$10 when ordered together).



DEMO SPEECH DISK AVAILABLE New! An introduction to Covox speech. The \$5 disk gives several general vocabularies that you can use in any of your own programs. Sample programs include a talking keyboard, calculator, clock, and more. English, French and German selections. Samples of level 1 and 2 speech editing, 28 page booklet included. Price is \$5 including postage (\$7 outside North America). Check, money order, or cash only. SPECIFY COMPUTER BRAND.

For telephone demo, additional information, or prompt service for credit card orders (except \$5 talking disk),



CALL (503) 342-1271



Call or write today for complete product information.



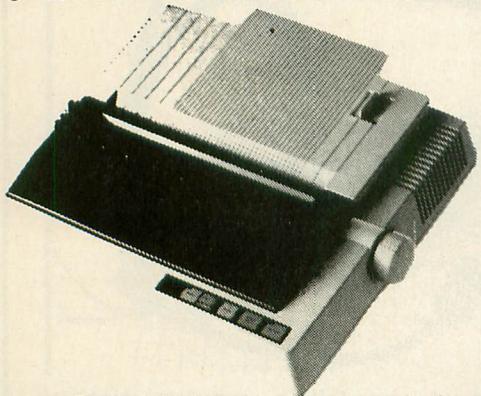
COVOX INC.

(503) 342-1271
675-D Conger Street, Eugene, OR 97402
Telex 706017 (AV ALARM UD)

CIRCLE 022 ON READER SERVICE CARD

LYCO COMPUTER MARKETING & CONSULTANTS, INC.

NX-10 CALL



Only the Star NX-10 gives you full front panel control in a 120 CPS draft/30 CPS near-letter-quality printer. And the quality and reliability Star is famous for.

PRINTERS ★ PRINTERS

STAR MICRONICS

LV 12-10 (New)	CALL
NL-10	CALL
NX-10	CALL
NB-15	CALL
SB-15	CALL
SG-15	367
SD-10	319
SD-15	438
SR-10	469
SR-15	578
SB-10	589

JUKI

Juki 6100	CALL
Juki 5510	CALL
Juki 6300	CALL

RS-232 serial board 55

C. ITOH

1550 SP+	CALL
D 1040	CALL
Prowriter Jr	CALL

Prowriter 8510 SP+ CALL

LEGEND

308	148
1080	199
1380	229
1385	289

SILVER REED

EXP 420P	209
EXP 600P	489
EXP 800P	649
EXP 770	740

PRINTERS ★ PRINTERS

ATARI 520 ST

ACTIVISION

Music Studio	34.75
Hacker	26.75
Little People	29.75
Paintworks	40.75
Hacker II	29.75

UNISON WORLD

Print Master	24.75
Art Gallery I or II	18.75

FIREBIRD

The Pawn	26.75
Star Glider	28.75

ACCESSORIES

ZOOM

PC 1200 ST 189 1200 (520ST) 149

SUPRA

ATARI

SF 314 Drive 219
SF 354 Drive 175

ANCHOR

Volksmodem 55

US ROBOTICS

Password 1200 189

SPECIAL

ATARI 520 ST

Color System

Call for lowest price!

TOLL FREE 1-800-233-8760

In PA 717-494-1030

LYCO COMPUTER MARKETING & CONSULTANTS, INC.

PRINTERS ★ PRINTERS

CITIZEN

120 D	179
MSP 10	285
MSP 15	385
MSP-20	325
MSP-25	485
Premier 35	469

PANASONIC

1080	195
1091	225
3131	249
1092	309
1592	419
1595	595

EPSON

LX80	CALL
FX85	CALL
DX10	CALL
DX20	CALL
DX35	CALL
H180	CALL
HS80	CALL
FX286	CALL
LQ800	CALL
LC1000	CALL

OKIDATA

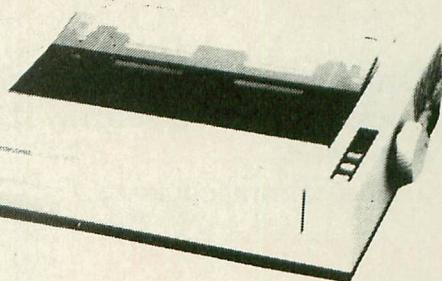
Okimate	199
292	499
293	599
120 NLO	205
182	214
192	348
93	CALL

SEIKOSHA

SP-1000 A centronics	165
BP-52001	649
BP-1300	469
Color Kit	119
SP-1000 ribbon	8.50

PRINTERS ★ PRINTERS

1091 \$225



The Panasonic KX-P 1091 impact dot matrix printer provides versatile performance. Multiple mode printing gives you access to near-letter-quality and proportional printing.

ATARI 520 ST

EPYX

Ashpai Trilogy	24.75	Word Writer	CALL
Winter Games	24.75	Swift Calc.	CALL
World Games	24.75	Data Manager	CALL

TIMEWORKS

24.75	Word Writer	CALL
24.75	Swift Calc.	CALL
24.75	Data Manager	CALL

SSI

Phantasie	24.75	Flight Simulator II	CALL
Baseball	24.75	Set	CALL

QUICKVIEW

Zoomracks	49.95
-----------	-------

SPECIAL

1040 ST
Computer System
Call for lowest price!

POLICY



In stock items shipped within 24 hours of order. No deposit on C.O.D. orders. Free shipping on prepaid cash orders within the continental U.S. Volume discounts available. PA residents add sales tax. APO, FPO, and international orders at \$5.00 plus 3% for priority mail service. Advertised prices show 4% discount for cash, add 4% for MasterCard and Visa. Personal checks require 4 weeks clearance before shipping. Can not guarantee compatibility. We only ship factory fresh merchandise. Ask about UPS Blue and Red label shipping. All merchandise carried under manufacturer's warranty. Return restriction applicable. Return authorization required. All items subject to change without notice.

TOLL FREE 1-800-233-8760

Customer Service 717-494-1670

IF YOU MAKE A MISTAKE, YOU'LL HEAR...

FOR
YOUR
ATARI ST
MACINTOSH
AND AMIGA

THUNDER!™

"One of the most impressive
programs we've seen... If you write,
you need THUNDER!"

-ANALOG COMPUTING MAGAZINE

THE REAL TIME SPELLING CHECKER THAT WORKS WITH:

- Word Processors
- Personal Productivity
- Management Programs
- Telecommunication
- Programs
- Educational Programs
- Data Base Programs
- Finance Programs
- and many other
programs!

ONLY

\$39.95*

For The ST

\$49.95*

For The Mac
and Amiga

NOT COPY PROTECTED

BATTERIES



INCLUDED

BATTERIES INCLUDED, an ITM company, 30 Mural Street, Richmond Hill, Ontario, Canada, L4B 1B5. (416) 881-9916. Customer Information (416) 881-9916. If you can't find this product at your local retailer, you may order it direct from us at the full suggested list price plus \$5.00 for postage and handling. For product orders please call 1-800-387-5707 (U.S. only). With all Batteries Included products you can always have the latest version of your program by returning the original disk and \$10.00. Write to us for our full color catalog of products for the APPLE, APPLE MACINTOSH, ATARI, ATARI ST, COMMODORE, COMMODORE AMIGA, AND IBM SYSTEMS. (C) 1986 BATTERIES INCLUDED. APPLE, APPLE MACINTOSH, ATARI, ATARI ST, COMMODORE, COMMODORE AMIGA, AND IBM are registered trademarks respectively of APPLE COMPUTERS INC., ATARI CORPORATION, COMMODORE BUSINESS MACHINES INC., AND INTERNATIONAL BUSINESS MACHINES INC.

* ALL PRICES SHOWN ARE IN U.S. DOLLARS. RETAILERS MAY SELL FOR LESS.

CIRCLE 011 ON READER SERVICE CARD

THUNDER!
is so much more
than just a
spelling checker!
THUNDER! is
also a document
analyzer and a
quick typist
abbreviation
expander!

CUSTOMIZE

EZRAM
520

**512K Memory Upgrade
for the Atari 520ST**

Featuring the **EZTemp**
Soldering Guide

Upgrade Your 520ST to a Full Megabyte of RAM

- Increase spreadsheet and database capability.
- Dramatically improve RAM disk capacity for enhanced I/O operations.

Designed for Simple Installation

- Features the **EZTemp** solder template. All the soldering, only 13 points, occurs on the template not at the RAM chips. Eliminates chip stacking.
- Clear, easy to follow, illustrated installation instructions.

Free Software

- Memory check diagnostic software and additional accessory programs included.

6 Month Warranty

Suggested List: \$199.00

Your 520ST with the **EZRAM** Memory Upgrade and **Z-Time** Clock/Calendar

Z-Time Internal Clock/Calendar Upgrade

Z-Time, the chip sized internal clock/calendar upgrade for your Atari 520ST. Easy to install. No soldering required. Doesn't use up your cartridge slot.

Simply open your 520ST, remove one of the chips on the motherboard and piggy back it on to the **Z-Time** clock/calendar. A ten minute installation gives you time and date every time you boot up with the security of a 10 year lithium battery back-up.

Each **Z-Time** upgrade kit also includes useful system and utility software. Ask for **Z-Time** at your local computer dealer or order directly from Terrific Peripherals.

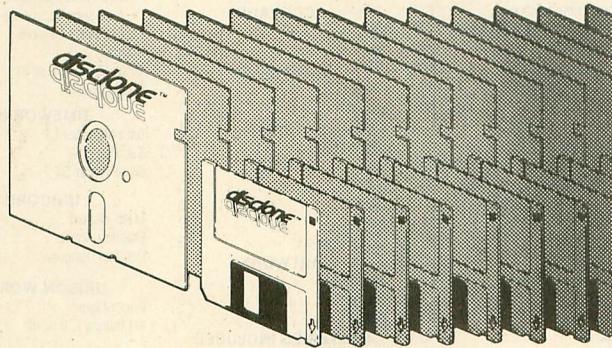
Suggested List \$49.95

VISA/MC/COD Add \$3.50 for shipping.



17 St. Mary's Court
Brookline, MA 02146
(617) 232-2317

Z-Time EZRAM 520 and **EZTemp** are trademarks of Terrific Peripherals
Atari and Atari 520ST are registered trademarks of Atari Corp.



How Many?

RAPID, COST EFFECTIVE RESPONSE to your diskette duplication and production requirements is what's important at Disclone. Extraordinary performance is what you can expect from Disclone.

Disclone is ready with full turnkey service capability: duplication, copy protection, documentation production, packaging assembly, delivery fulfillment.

Disclone service can't be duplicated. Accept no substitutes. Your diskette duplication and production requirements deserve Disclone attention.

disclone
diskette duplication

DISKETTE DUPLICATION AND PRODUCTION

1050 North Fifth Street, San Jose, California 95112
(408) 947-1161 OUTSIDE CA: 1-800-826-4296

CIRCLE 024 ON READER SERVICE CARD

Solapak ST Lean & Mean!

Print Spooler/Ram Disk

Now with the "Solapak ST" print spooler you can:

- print up to 8 files with separate printing qualities at one time.
- Configure to any parallel printer with 32 user definable options.
- Adjust line spacing, format your output, vary the print speed, pause/restart printing and much, much more.

The "Solapak ST" Ram Disk lets you:

- configure up to 1 Mb and 128 files.
- save time with a disk transfer rate of over 10 million bits/second.

Includes user adjustable screen saver to help prevent image "burn-in".

"Solapak ST" is easy to use and the fastest, most versatile and memory efficient professional print spooler and ram disk available for the **ATARI ST**.

"Solapak ST" demo at your ST retailer or on BBS's nationwide.

\$39.95 Not copy protected

Action Software - 69 Clementina St. Dept. SR
San Francisco, CA 94105 - (415) 974-6638

Mail orders: please include \$3.00 S&H and Ca.
residents add \$2.60 sales tax. VISA, MC OK.

CIRCLE 041 ON READER SERVICE CARD



MICRO TYME



A DIVISION OF MICRO PERIPHERALS, INC.
P.O. BOX 368 • KETTERING, OHIO 45409



M-F 9am - 9pm • EST • SAT 10am - 4pm

Ohio Residents, Order Status or Tech, Info Call (513) 294-6236



ATARI

HARDWARE/ACCESSORIES

ATARI

520 ST Color or Mono	CALL
ST Monitor Cables	CALL
SF 314 Double Sided Drive	CALL
Supra 20, 30, 60 Meg Hard Disks	CALL
SHD 204 20 Megabyte Hard Disk	CALL
SC 1224 RGB Color Monitor	CALL
130 XE	CALL
65 XE	CALL
1050 Disk Drive	CALL
1020 Color Printer/Plotter	27
Astra "The One"	284
7800 Pro System	CALL
Power Supply 400/800/810 1050/850	15
Power Supply 600/800 XL, 130 XE	26
Power Supply for Indus GT	15

PANASONIC

Exciting New Models	CALL
KX-P1091	CALL
KX-P1092 80 col., True 180 cps	339
KX-P1592 136 col., True 180 cps	549
KX-P3131 L.Q. Daisy, 80 col.	279
KX-P3151 L.Q. Daisy, 136 col.	429
KX-P110 Ribbon, Blk	9
COLOR RIBBONS	11

STAR MICRONICS

NX-10 (80 col.)	NEW MODEL	CALL
NL-10	CALL	
SG-15 (135 col.)	429	
STAR SG-10 Ribbons	4	
Ribbons NL or NX	CALL	

MODEMS

ATARI 1030	45
XW-301 Direct Connect	CALL
HAYES 1200 Smartmodem	399
US ROBOTICS COURIER 2400-100% Hayes!	429
HABA 1200 (Hayes Compat)	119
VOLKSMODEM VM 520	149
AVATEX Smart 1200 bps	Special
AVATEX 1200 H.C.	99
	149

INTERFACES/BUFFERS

ATARI 850	In Stock!	119
P.R: CONNECTION (100% 850 compatible)	66	
CABLES - We've Got 'Em	CALL	
XETEC GRAPHIX AT	39	
SUPRA/MPP MICROPRINT	39	
SPECIAL SUPRA MICROSTUFFER (64K)	59	
SUPRA/MPP 1150	CALL	

Prices Are Per Box of 10

5 1/4"	GENERIC		SONY	MAXELL	BONUS		WABASH	3 1/2	SONY		MAXELL	VERBATIM
	SS/DD	DS/DD	SS/DD	DS/DD	SS/DD	DS/DD	SS/DD		SS/DD	DS/DD	SS/DD	SS/DD
2-5	6.95	8.95	9.50	12.50	9.50	11.50	8.50	2-5	15.00	24.00	15.00	14.00
6-10	5.95	7.95	8.50	11.50	8.50	10.50	7.50	6-10	14.00	22.00	14.00	13.00

Rainbow Colored Centech Disks (2 ea. of 10 colors per pkg) 17

"Silver" Centech Disks (20 Pack)

17

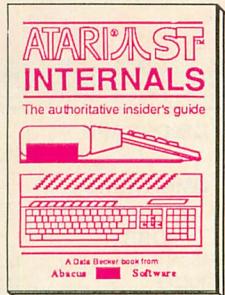
TO ORDER, CALL TOLL FREE 1-800-255-5835

TERMS AND CONDITIONS

- NO EXTRA CHARGES FOR CREDIT CARDS! • We do not bill until we ship • Minimum order \$20 • C.O.D. to continental U.S. only, add \$3 • Ohio residents add 6% sales tax • Please allow 3 weeks for personal or company checks to clear • Shipping/Handling: (Call for Quote). Hardware, minimum \$4; Software and most accessories, minimum \$3 • Overnight shipment available at extra charge • We ship to Alaska, Hawaii, Puerto Rico (UPS Blue Label Only), APO, and FPO • Canadian orders, actual shipping plus 5%, minimum \$5 • All defective products require a return authorization number to be accepted for repair or replacement • No free trials or credit • Returns subject to 15% re-stocking charge • Due to changing market conditions, call toll free for latest price and availability of product. FOR YOUR PROTECTION, WE CHECK ALL CREDIT CARD ORDERS FOR FRAUD.

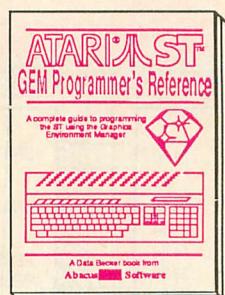
GREAT BOOKS

from the name you
can count on...Abacus



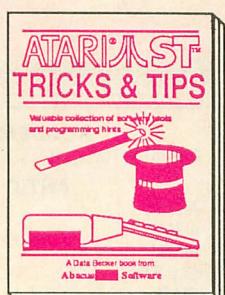
Essential inside info on the ST. Descriptions of sound & graphic chips, internal hardware, I/O ports. Commented BIOS listing. Indispensable reference for your ST library. 280pp \$19.95

Machine Language
Write fast programs for your ST using 68000 machine language. Explains number systems, register usage, structures, internal system routines. 280pp \$19.95



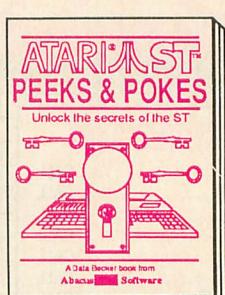
Easy-to-understand format covers the workings of GEM. Examples are in C and assembly. Covers VDI and AES functions and parameters. Serious programmers should't be without. 410pp \$19.95

BASIC to C
Move from BASIC to C language fast. Parallel examples show techniques and constructs in both languages. Pointers, variables, data structures. 250pp \$19.95



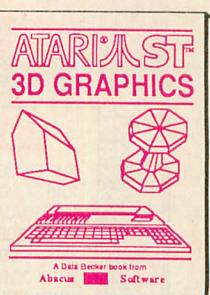
Fantastic collection of programs & techniques. Programs include: super-fast RAM disk; time-saving print spooler; color print hardcopy; plotter output; accessories. 260pp \$19.95

Beginner's Guide
For the first-time user. Get a basic understanding of the ST. Explore LOGO and BASIC. Simple explanations. Illustrations. Glossary. Index. 200pp \$16.95



Enhance your programs with these quick-hitters. Explore different languages BASIC, C, LOGO & machine language, using the various interfaces, memory usage, disk access. 280pp \$16.95

Optional diskettes are available for \$14.95 each. Call now for the name of the dealer nearest you. Or order direct using your credit card. Add \$4.00 per order for shipping. Foreign orders add \$10.00 per item. Call or write for your free catalog. Dealers inquires welcome—over 1500 dealers nationwide.



Fantastic! Rotate, zoom, and shade 3D objects. Programs written in fast machine language. Learn the mathematics behind 3D graphics. Hidden line removal, shading. 3D animation. \$24.95

Abacus

P.O. Box 7219 Dept. AC Grand Rapids, MI 49510
Phone 616/241-5510 • Telex 709-101 • Fax 616/241-5021

CIRCLE 002 ON READER SERVICE CARD

810 VER 7 HAPPY \$99.95
\$119.95 AFTER 12/25/86

800 PCB Sets Main, CPU, 10K OS, Power & RAM \$40 Less RAM \$30

1200 BAUD MODEM \$125.00

810 DISK DRIVE IN BROWN PLASTIC CASE WITH I/O CABLE AND POWER SUPPLY \$110 WITH HAPPY V7.0 \$199.95

CABLES
DISKS 1050 HAPPY \$150.00
ST INTERNAL CLOCK \$44.95
ST CONNECTORS

(\$) Prices in parenthesis (\$) are less I/O Cable and Power Pak. Add \$10.00 each.

New Replacement Printed Circuit Boards (PCB) w/parts

800 Main	\$10	16K RAM	\$10	810 side w/DS	\$30
800 Power	\$5	10K OS	\$10	810 Analog	\$10
CPU w/GTIA	\$10	810 DS	\$5	810 Power	\$15
800 XL PCB	\$50	825 PCB*	\$25	1200 XL PCB	\$35
Power Pak 800/810	\$15 ea	800 XL Power	\$25 ea		
130 XE Keyboard	\$35.	800 XL Keyboard	\$25		

Power Pak 800/810 \$15 ea 800 XL Power \$25 ea

130 XE Keyboard \$35. 800 XL Keyboard \$25

\$4.50 each or 4.00 in quantities of 10:

GTIA	BASIC REV A	ASSEMBLER REV A
800 CPU 6502	800 ANTIC D	1771
800 OS ROMS	XL CPU 6502C	POKEY
6520 PIA	MPU 6507	PIA 6532
RAM 6810	810 ROM C	VCS TIA 444

\$12.00 each:

XL ANTIC E	XL/XE OS	850 ROM B	1050 ROM (\$10.)
BASIC REV C	XL MMU	XE MMU	

Public domain software (520/1040ST and 8 Bit):

Too many titles to list Disks are 5.00 each

Write for complete list. *Missing some chips.

5 1/4" Diskettes in Bulk:

10 for 7.50 100 for 50.00 1000 for 400.00
Note: Disks may contain discontinued software and may not be notched. All disks are new.

SS 810 Disk Drive	\$110.00
SS 810 with Happy	\$199.95
With B&C Black Anodized Case	\$140.00 (\$120.)
With Case and Happy Upgrade	\$220.00 (\$200.)
810 PCB Set w/side, DS, Power, Analog	\$55
810 Drive Mechanisms Tandon or MPI	\$60
Field Service Manuals 800/400, 800XL or 810	\$25 ea
For 1050, 1025, 1027, 825, 850 or 1200XL	\$20 ea
1050 DIAG. Disk (not for happy drives)	20.00
810/1050 DIAG. Cart	25.00
Salt 2.07 400/800 Cart	25.00
Salt SE 800XL Cart	25.00
CPS Super Salt Cart	25.00
Atari Lab Temp Parts Kit	10.00
Atari Trak Ball	25.00
De-Re Atari	\$10.00

B&C computervisions

(408) 749-1003

CIRCLE 010 ON READER SERVICE CARD

3283 Kifer Rd., Santa Clara, CA 95051

Hours: Tuesday-Friday 10am-6pm/Sat. 10am-5pm

Terms: Calif. Res. add 7% sales tax. No orders under \$20.

We ship UPS COD, Prepaid or MC/Visa. Add shipping (minimum \$5.)

Black Patch

ST HARDWARE

1040 ST MONO.....	CALL
1040 ST RGB.....	CALL
520 ST MONO.....	CALL
520 ST RGB.....	CALL
SF354 SS/DD.....	CALL
SF314 DS/DD.....	CALL
SM124 MONOCHROME.....	CALL
SC1224 RGB.....	CALL
SHD 204 DRIVE.....	CALL
SMM804 PRINTER.....	CALL
ST PRINTER CABLES.....	12.00
ST MODEM CABLES.....	12.00

PRINTERS

ATARI SMM 804.....	CALL
ATARI XMM 801.....	CALL
PANASONIC 1080.....	198.00
1091.....	229.00
1092.....	309.00
1592.....	CALL
3131.....	259.00
3151.....	CALL
STAR MICRONICS	
NX-10.....	234.00
NL-10.....	CALL
EPSON LX-80.....	CALL
FX-85.....	CALL
FX-286.....	CALL
LQ-800.....	CALL
LQ-1000.....	CALL

MODEMS

AVATEX 1200.....	78.99
AVATEX 1200HC.....	128.99
QMI 1200ST.....	129.00
ATARI XM301.....	35.75
ATARI 1200.....	CALL
SUPRA 300AT.....	33.99
HABA 1200SZ.....	109.00

ST SOFTWARE

ACTIVISION

BORROWED TIME.....	32.50
HACKER.....	28.99
HACKER 2.....	31.75
MINDSHADOW.....	32.50
LITTLE COMPUTER PEOPLE.....	32.50
PAINTWORKS.....	43.99
MUSIC STUDIO.....	37.99
CHAMP. BASEBALL.....	CALL
PORTAL.....	CALL
BASKETBALL.....	CALL
GAMEMAKER.....	CALL
PEBBLE BEACH.....	CALL

ACCESS

LEADER BOARD.....	25.99
-------------------	-------

ACCOLADE

MEAN 18.....	26.99
--------------	-------

ATARI

HOME PLANET.....	23.75
JOUST.....	23.75
STAR RAIDERS.....	23.75
DBMAN.....	CALL
CP/M EMULATOR.....	CALL
IBM EMULATOR.....	CALL

ACADEMY

TYPING TUTOR.....	24.50
A-CALC.....	39.99
A-SEKA.....	23.99
A-RAM.....	14.50
CAD 3-D.....	33.99
FLASH.....	27.50
GST C.....	59.99
GST ASSM.....	53.50
EXPERT OPINION.....	66.50

BATTERIES INCLUDED

DEGAS.....	25.99
BTS: THE SPREADSHEET.....	CALL
THE CONSULTANT.....	CALL
PORTFOLIO.....	CALL
I'S TALK.....	49.50
PAPERCLIP ELITE.....	CALL
DEGAS ELITE.....	CALL
I'S TIME.....	CALL
HOMEPAK.....	CALL
THUNDER.....	25.99
TIMELINK.....	32.50
B/GRAPH ELITE.....	CALL

CENTRAL POINT

COPY II ST.....	25.99
-----------------	-------

Epyx

ROGUE.....	25.99
WORLD GAMES.....	25.99
WINTER GAMES.....	25.99
CHAMP. WRESTLE.....	25.99
TEMPLE OF APSHA.....	25.99

FIREBIRD

THE PAWN.....	28.99
STAR GLIDER.....	28.99
GOLDEN PATH.....	28.99

BECKMEYER

MICRO C SHELL.....	34.99
MICRO RTX.....	47.99
MTC SHELL.....	54.75

MICHTRON

BBS.....	33.75
M-DISK.....	26.75
SOFTSPOOL.....	26.75
ANIMATOR.....	27.50
TIME BANDITS.....	26.75
MAJOR MOTION.....	27.50
CORNERMAN.....	33.75
MIGHTY MAIL.....	33.75
GOLD RUNNER.....	27.50
DOS SHELL.....	27.50
PERSONAL MONEY.....	33.75
UTILITIES.....	CALL
BUSINESS TOOLS.....	33.75
D.F.T.....	33.75
KISSED.....	27.50
MISSION MOUSE.....	27.50

MICROPROSE

SILENT SERVICE.....	26.99
GUNSHIP.....	CALL
F-15 STRIKE.....	CALL

MI-GRAPH

EASY DRAW.....	96.99
----------------	-------

MINDSCAPE

BRATACCUS.....	31.50
----------------	-------

OMNITREND

UNIVERSE 2.....	47.99
-----------------	-------

OSS

PERSONAL PASCAL.....	47.50
----------------------	-------

ORIGIN SYSTEMS

ULTIMA III.....	CALL
-----------------	------

ULTIMA IV.....	CALL
----------------	------

REGENT

REGENT BASE.....	66.50
------------------	-------

WORD/SPELL.....	34.99
-----------------	-------

REGENT WORD II.....	66.50
---------------------	-------

SSI

PHANTASIE.....	26.50
----------------	-------

BASKETBALL.....	CALL
-----------------	------

SUBLOGIC

FLIGHT SIMULATOR.....	CALL
-----------------------	------

JET.....	CALL
----------	------

UNISON WORLD

PRINTMASTER.....	25.99
------------------	-------

ART GALLERY 1.....	19.99
--------------------	-------

ART GALLERY 2.....	19.99
--------------------	-------

XLENT SOFTWARE

RUBBER STAMP.....	25.99
-------------------	-------

MUSIC BOX.....	31.75
----------------	-------

TYPESETTER.....	25.99
-----------------	-------

QMI

ST TALK.....	10.50
--------------	-------

ST-NET.....	CALL
-------------	------

METACOMCO

MCC PASCAL.....	73.49
-----------------	-------

LATTICE C.....	97.99
----------------	-------

MACRO ASSEMBLER.....	54.75
----------------------	-------

TDI

USCD PASCAL.....	52.50
------------------	-------

MODULA-2.....	52.50
---------------	-------

MODULA-2 DEV.....	98.93
-------------------	-------

MISC.

MEGAMAX C.....	173.99
----------------	--------

HENRY'S BASIC.....	32.99
--------------------	-------

MICROLEAGUE BASEBALL.....	CALL
---------------------------	------

FORTRAN 77.....	99.95
-----------------	-------

TIMESAVER.....	34.99
----------------	-------

ACTION PAK.....	29.99
-----------------	-------

LOGIKRON CLOCK.....	34.95
---------------------	-------

ST POOL.....	18.99
--------------	-------

SUNDOG.....	26.99
-------------	-------

VIP PROF

Systems

We'll beat any
price anywhere!

ATARI 8-BIT HARDWARE

130XE	119.94
1050	119.50
INDUS GT	179.00
ATARI 1027	84.00
65XE	87.00
XM301	35.75

ACCESSORIES/INTERFACES

US DOUBLER	45.00
RAMBO XL	26.00
R-TIME	45.00
P.R: CONNECTION	54.99
SUPRA MICROPRINT	31.00
SUPRA 1150	45.00
MICROSTUFFER	59.00
ATARI 850	105.00
MIO	CALL
XEP80	CALL

ATARI 8-BIT SOFTWARE

ACCESS

LEADER BOARD	25.99
--------------	-------

ACCOLADE

RAID OVER MOSCOW	25.99
BEACH HEAD II	25.99
HARDBALL	22.99
FIGHT NIGHT	22.99

BRODERBUND

PRINTSHOP	27.99
P.S. LIBRARIES	16.99
PRINTSHOP COMPANION	23.75
CH. LODE RUNNER	19.99
LODE RUNNER	22.99
KARATEKA	19.99

BATTERIES INCLUDED

B/GRAPH	25.75
PAPERCLIP W/SPELL	36.50
HOMEPAK	31.99

OSS

ACTION!	48.99
BASIC XE	48.99
BASIC XL	37.75
MAC/65	48.99
OSS TOOLKIT	19.99

SUBLOGIC

FLIGHT SIMULATOR II	33.50
JET	15.50
SCENERY DISKS	CALL

EPYX

WORLD CHAMPIONSHIP KARATE	19.99
RESCUE AT FRACT	25.99
KORONIS RIFT	25.99
THE EIDOLON	25.99
SUMMER GAMES	25.99
TEMPLE OF APHSAI TRILOGY	25.99

XLENT

WORD PROC.	19.99
MEGAFONT II+	16.99
MIN. GOLF	19.99
PAGE DES.	19.99
RUBBER STAMP	19.99
TYPESETTER	22.99

MICROPROSE

CONDOR	CALL
CONFLICT IN VIETNAM	25.75
CRUSADE IN EUROPE	25.75
DECISION IN DESERT	25.75
DESTROYER ESCORT	CALL
GUNSHIP	CALL
KENNEDY APPROACH	22.99
SOLO FLIGHT	22.99
F-15 STRIKE EAGLE	22.99
SILENT SERVICE	22.99

ACTIVISION

HACKER	16.99
SPACE SHUTTLE	16.99
MINDSHADOW	16.99
GREAT AMERICAN RD RACE	16.99
GHOSTBUSTERS	16.99

FIREBIRD

CHIMERA	13.99
GOLDEN PATH	22.99
THE PAWN	28.99

ATARI

ATARIWRITER PLUS	19.99
LEARNING PHONE	19.99
SILENT BUTLER	19.99
STAR RAIDERS II	13.99

SYNAPSE

SYNFILE +	32.50
SYNCALC	32.50

ORIGIN

ULTIMA IV	41.50
-----------	-------

SSI

USAAF	37.50
MECH BRIGADE	37.50
GETTYSBURG	38.49
GEMSTONE HEALER	25.99
FIGHTER COMMAND	38.49
PHANTASIE	25.99
BATTALION COMMANDER	25.99
BATTLE OF NORMANDY	25.99
BATTLE OF ANTIETAM	31.49
BREAKTHROUGH IN THE ARDENNES	38.49
BROADSIDES	25.99
CARRIER FORCE	38.49
COLONIAL CONQUEST	25.99
COMBAT LEADER	25.99
COMPUTER AMBUSH	38.49
FIELD OF FIRE	25.99
KAMPFGRUPPE	38.49
KNIGHTS OF THE DESERT	25.95
OBJECTIVE KURSK	25.99
OPERATION MARKET GARDEN	31.49
PANZER GENIDER	25.99
REFORGER '88	38.49
SIX GUN SHOOTOUT	25.99
TIGERS IN THE SNOW	25.99
WAR IN RUSSIA	49.99
COMPUTER QB	25.99
GEMSTONE WARRIOR	22.49
IMPERIUM GALACTIUM	25.99
COSMIC BALANCE	25.99
50-MISSION CRUSH	25.99
GALACTIC ADVENTURES	38.49
QUESTRON	31.49
WIZARD'S CROWN	25.99



Black Patch Systems Orders Only:

Call TOLL FREE 1-800-ATARI-02 or 301-987-2300 (toll call)

For technical information or order inquiries, call 301-987-0019,
or write Black Patch Systems, P.O. Box 501, Arnold, MD 21012.

HOW TO ORDER: CASHIER CHECK, MONEY ORDER...NO PERSONAL CHECKS...NO C.O.D.'S...SHIPPED U.P.S....ALL PRICES AND POLICIES SUBJECT TO CHANGE WITHOUT NOTICE.

SOFTWARE: ALL PRICES INCLUDE SHIPPING. NO CREDIT CARD SURCHARGE. FREE AIR SHIPPING ON PURCHASE OF SOFTWARE OVER \$150.00

HARDWARE: ONLY 2% CREDIT CARD SURCHARGE. SHIPPING ORDERS UNDER \$100.00 ADD \$3.00. SHIPPING ORDERS OVER \$100.00 ADD \$5.00.

INTERNATIONAL: ACTUAL FREIGHT CHARGED ON ALL ORDERS OUTSIDE THE CONTINENTAL U.S., INCLUDING A.P.O.

POLICIES: NO RETURNS WITHOUT AN AUTHORIZATION NUMBER. NO RETURNS UNLESS DEFECTIVE. ALL DEFECTIVE ITEMS WILL BE EXCHANGED...NO EXCEPTIONS.



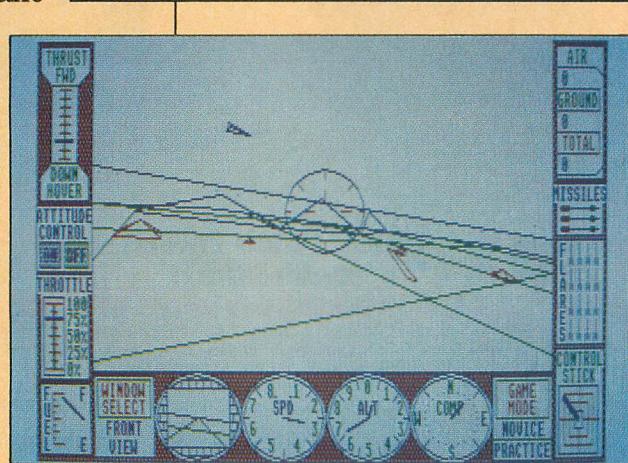
FREE SHIPPING ON ALL SOFTWARE/FREE AIR SHIPPING ON ALL SOFTWARE OVER \$150.

One of the World's Most Popular Games on the Macintosh
Now AVAILABLE ON ATARI ST!

HARRIER STRIKE MISSION

There's this island off the coast somewhere...the enemy's headquarters. Your weapon? The Harrier Jump Jet, one of the world's most sophisticated technological marvels, which combines the ability to take off and land vertically like a helicopter with the speed and punch of the latest in modern jet armament. Your mission, should you decide to accept it, is to pilot your Harrier from the deck of an aircraft carrier, take out enemy aircraft, locate and destroy enemy headquarters and fuel depot, and safely land back on the deck.

Simple, isn't it? Hardly! Facing you will be some of the



world's nastiest enemy fighter planes launching heat seeking missiles. The good news is that you have three Sidewinder missiles, two 30mm Aden cannon

pods and the ability to maneuver like no other jet in history! The bad news? You have only one plane to fight off five enemy aircraft.

Now wipe that sweat off your brow, don your helmet and gloves, strap yourself into your seat and GOOD LUCK! 'Nuff said, it's CLOB-BERIN' time! Harrier Strike Mission—a 3-Dimensional Flight Combat Simulator for your Atari ST. The first in a series of new projective 3-D simulations from MILES COMPUTING, Inc.

FROM



Miles ahead of the pack.

Miles Computing, Inc.

7741 Alabama Avenue, Suite 2
Canoga Park, CA 91304 • (818) 341-1411

CIRCLE 050 ON READER SERVICE CARD

GEM DIALOG

continued from page 75

dialog box is first displayed. We have no editable text in our box, so we pass in a zero. GEM will control and monitor all interaction with the displayed dialog box until the user clicks on one of the designated "exit" objects. GEM then returns the object's number to the program, which in our case gets

MegaMax C users should find little problem in converting this program from Alcyon C

placed into the variable called **button**.

When GEM passes control back to our program, we use the next 10 lines to test for exactly which object the user clicked on. Using our TOPUP button, the third line would detect when it was pressed for an exit and divert control to the function called **d_topup()**. The **do** loop construct will continue to activate the dialog box until the pressed exit button is the **quit** button.

form_dial(3...) forces a redraw of the screen that was covered by the dialog box. When we fall out of the loop, the next line is **form_dial(2...)**, which draws the "shrinking box" graphic onscreen, to show the utility closing. The screen is redrawn from the image which was saved in the **form_dial(0...)** call earlier. Now that we want to leave the application, we set **finished** to TRUE, and return to the outermost loop, which will **terminate()** and exit.

FIND SIZES

The next function is **find_box_sizes()**, which uses an AES object library call named **objc_offset()** to discover the x,y coordinates of the upper left corner of the object you ask it for. In our case, for each number

box we ask for, (TOPNUM, BOTNUM, CURRNUM, or SPEEDNUM), we also get the width and height of the box so we may use the described rectangle as a clipping window. If we did not, then every time we updated each number, GEM would redraw the entire dialog box, at a cost of 1-2 seconds.

UP AND DOWN

The next eight functions are called each time their function button is pressed. For example, **d_topup()** is called whenever the TOPUP button is pressed. The routine **d_topup()** simply increments the variable **top** and then calls **adjust()**, passing in the tree, object, string, and clipping rectangle wanted. All eight routines work the same, except for **d_curup()** and **d_curdn()**, which also have the responsibility of placing the control bytes out the PRINTER port.

ADJUSTABLE

The next function, **adjust()**, takes the value of the variable passed to it, changes the numeric value into an ASCII text string, then tells the dialog box where to find the just-created string of ASCII digits when it is needed for display.

The function **ftoa()** changes a numeric value into the ASCII string. MegaMax C users will want to substitute **sprintf()** for this call. Next, **set_text()** tells the dialog box where the newly created string is located, and **objc_draw()** redraws the number box object. Before we leave, **beep()** sounds a click from the speaker.

Right below is the **set_text()** function, for which I thank ANTIC ONLINE columnist Tim Oren for his help. This function needs the address of the ROOT of the dialog's tree, the number of the OBJECT you desire to change, and the address of the first byte of a null-terminated string of digits to show.

To begin, we declare **objc_specification** to be a pointer (*) to a TEDINFO structure. We then assign a value to this pointer by computing and retrieving the **ob_spec** value,

which in this case points to the TEDINFO structure itself. Using this pointer to a structure, we assign to the structure entries **te_ptext** and **te_txtn** the values for the address of the new string and the length of the new string.

The next two functions, **move_top()** and **move_bottom()**, describe how to perform timed, programmed moves of the camera stage to the top of available travel, or to the bottom. We set up a **for** loop to cover the range of travel desired, and then call **d_curup()** or **d_curdn()** as desired. Next to last, **beep()** takes a LO, HI, and loop length value and uses these to perform simple tones through the monitor speaker.

Finally, **terminate()** does just that; the only difference from every other **terminate()** call we've published so far is inclusion of a **rsrc_free()** call, which will disengage and free the memory we reserved for the resource file when we first started the program.

A
NOW, PLAY
CHESS
AGAINST YOUR ST™
WITH **TECHMATE**™

► IMPECCABLE COLOR GRAPHICS
► TWO ON-SCREEN CLOCKS
► FULLY MOUSE-DRIVEN PLAY
► ADVANCED 68000 ALGORITHM

TECHMATE™
VERSION 1.0 \$49.95 POSTPAID
International Orders Add \$5.00
USER'S GUIDE ** WARRANTY
** NOT COPY PROTECTED **
(RGB only--no monochrome)

SEND CHECK OR MONEY ORDER TO:

szabo software

P.O. BOX 623

BORREGO SPRINGS, CA. 92004

For a DEMO Version of TechMate
ask your local ST User's Group
or send \$5.00 to Szabo Software!

CIRCLE 096 ON READER SERVICE CARD

METACOMCO

The quality source for Atari ST software
Announces

CAMBRIDGE LISP

THE SYMBOLIC LANGUAGE FOR
ATARI ST and AMIGA



An interpreter/compiler providing a complete
LISP development environment for \$199.95

also available

Lattice 'C' - The well known Lattice 'C' compiler	\$149.95
MCC Pascal - Fast ISO/ANSI standard compiler	\$ 99.95
Macro Assembler - Professional quality development system	\$ 79.95
BCPL - NEW! Full standard BCPL compiler	\$149.95
Make - NEW! UNIX-like Make utility	\$ 69.95
Menu + - Best selling ST menu generator	\$ 29.95

All ST languages include Menu+ and provide full interface to GEM
VDI/AES functions.

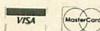
Contact your local dealer or call:

TEL: (US) 800-AKA-META (CAL) 800-GET-META

Add 6 1/2% tax if CA resident

Metacomco

5353 #E Scotts Valley Dr., Scotts Valley, CA 95066



Registered trademarks: Lattice - Lattice, Inc.; Atari ST - Atari, Inc.; UNIX - Bell Labs.

CIRCLE 051 ON READER SERVICE CARD

Megamax C

for the
Atari ST
Featuring

- One pass Compile • In-Line Assembly • Smart Linker
- Full Access to GEM routines • Register Variable Support • Position Independent Code • and much more...

System Includes:

- Full K&R C Compiler (with common extensions)
- Linker • Librarian • Disassembler • C Specific Editor
- Code Improver • Documentation • Graphical Shell

Benchmark	Compile Time	Execute Time	Size
Sieve	70	2.28	5095
"Hello, world"	63	N/A	4691

*Times in seconds. Sieve with register variables.

\$199.95 For more information, call or write:

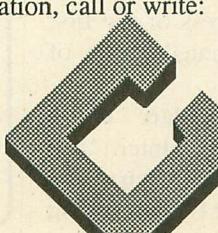
Megamax, Inc

Box 851521

Richardson, TX 75085

(214) 987-4931

VISA, MC, COD ACCEPTED



CIRCLE 040 ON READER SERVICE CARD

ATTN:
PASCAL
USERS

MODULA-2

the successor to Pascal

FOR
ATARI
520ST

- FULL interface to GEM DOS, AES and VDI
- Smart linker for greatly reduced code size
- Full Screen Editor linked to compiler locates and identifies all errors.
- True native code implementation (Not UCSD p-Code or M-code)
- Sophisticated multi-pass compiler allows forward references and code optimization
- Desktop automates Edit/Compile/Link cycle
- FileSystem, RealInOut, LongInOut, InOut, Strings, Storage, Terminal
- Streams, MathLib0 and all standard modules
- Directory search paths
- Supports real numbers and transcendental functions ie. sin, cos, tan, arctan, exp, ln, log, power, sqrt
- 3d graphics and multi-tasking demos
- CODE statement for assembly code
- 370-page manual
- Installs on Hard disk and RAM disk
- No royalties or copy protection
- Phone and network customer support provided

Pascal and Modula-2 source code are nearly identical. Modula-2 should be thought of as an enhanced superset of Pascal. Professor Niklaus Wirth (the creator of Pascal) designed Modula-2 to replace Pascal.

Added features of Modula-2 not found in Pascal

- CASE has an ELSE and may contain subranges
- Programs may be broken up into Modules for separate compilation
- Machine level interface Bit-wise operators Direct port and Memory access Absolute addressing Interrupt structure
- Dynamic strings that may be any size
- Multi-tasking is supported
- Procedure variables
- Module version control
- Programmer definable scope of objects
- Open array parameters (VAR : ARRAY OF REALS:)
- Elegant type transfer functions

Ramdisk Benchmarks (secs)	Compile	Link	Execute	Optimized Size
Sieve of Eratosthenes:	6.2	4.3	3.5	2600 bytes
Float	6.4	4.8	8.3	4844 bytes
Calc	5.5	4.2	3.3	2878 bytes
Null program	5.1	3.2	—	2370 bytes

```

MODULE Sieve;
CONST Size = 8190;
TYPE FlagRange = [0..Size];
FlagSet = SET OF FlagRange;
VAR Flags: FlagSet;
i: FlagRange;
Prime, k, Count, Iter: CARDINAL;
BEGIN
  ("$-SR-$A+");
  FOR Iter:= 1 TO 10 DO
    Count:= 0;
    Flags:= FlagSet(); (* empty set *)
    FOR i:= 0 TO Size DO
      IF (i IN Flags) THEN
        Prime:= (i * 2) + 3; k:= i + Prime;
        WHILE k < Size DO
          INCL (Flags, k);
          k:= k + Prime;
        END;
        Count:= Count + 1;
      END;
    END;
  END Sieve.

MODULE Float;
FROM MathLib0 IMPORT sin, ln, exp,
sqrt, arctan,
VAR x,y: REAL; i: CARDINAL;
BEGIN
  (*$-SA-$S*)
  x:= 1.0;
  FOR i:= 1 TO 1000 DO
    y:= sin (x); y:= ln (x); y:= exp (x);
    y:= sqrt (x); y:= arctan (x);
    x:= x + 0.01;
  END;
END float.

MODULE calc;
VAR a,b,c: REAL; n, i: CARDINAL;
BEGIN
  ("$-SA-$S")
  n:= 5000;
  a:= 2.71828; b:= 3.14159; c:= 1.0;
  FOR i:= 1 TO n DO
    c:= c*a; c:= c*b; c:= c/a; c:= c/b;
  END;
END calc.

```

Product History

The TDI Modula-2 compiler has been running on the Pinnacle supermicro (Aug '84), Amiga (Jan '86) and will soon appear on the Macintosh and UNIX in the 4th Qtr '86.

Regular Version \$79.95 Developer's Version \$149.95 Commercial Version \$299.95

The regular version contains all the features listed above. The developer's version supplies an extra diskette containing a symbol file decoder - link and load file disassemblers - a source file cross referencer - symbolic debugger - high level Windows library Module - Ramdisk and Print Spooler source files - Resource Compiler. The commercial version contains all of the Atari module source files.

Other Modula-2 Products

Kermit	- Contains full source plus \$15 connect time to Compuserve.	\$29.95
Examples	- Many Modula-2 example programs to show advanced programming techniques	\$24.95
GRID	- Sophisticated multi-key file access method with over 30 procedures to access variable length records.	\$49.95

TDI SOFTWARE, INC.

10410 Markison Road ■ Dallas, Texas 75238 ■ (214) 340-4942
Telex: 888442 Compuserve Number: 75026,1331

CIRCLE 066 ON READER SERVICE CARD

DEDUCTION

Solve the mystery color patterns

Deduction is a classy ST BASIC adaptation of the old game most recently popularized as Master Mind. You must guess a pattern of four colors chosen by the computer. Each color can occur only once in the sequence. The game's concept is ancient, having been played in old England as Cows and Bulls, and more recently as Code-Breaker.

First type in DEDUCT.BAS, checking with ST TYPO, and SAVE a copy before you RUN it. Load ST BASIC and click on BASIC. PRG. Then load DEDUCT.BAS and click on "Run" in the appropriate window. This calls up a low-resolution color screen that interacts with the user via the mouse. (Sorry, Deduction does not run on the ST's high-resolution monochrome monitor.)

To begin deducing, click on the left button for the easy version of the game, or right button for the hard version. Both versions give you a choice of red, yellow, green, blue, cyan and violet. But the hard version also adds pink. This might not sound like a big difference, but with six colors, the odds are one in 360 that you'll get it right the first time. Adding a seventh color raises the odds to one in 840.

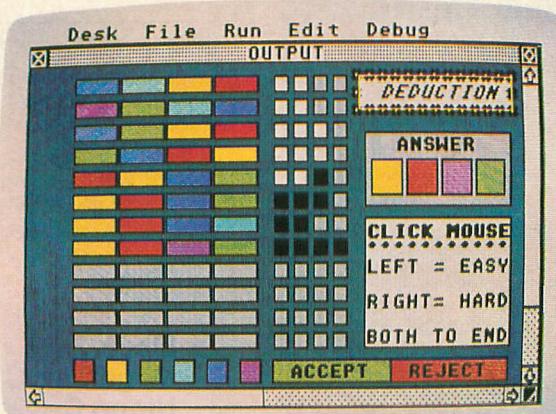
12 TRIES

You get 12 chances to guess the correct sequence. After you click on a color, that color is copied above in the first open rectangle on the left. Click on "Accept"—or "Reject" if you change your mind. The squares to the right of the four rectangles change color to indicate how close your

guess was. White squares show that you got a color right, but in the wrong sequence. Black squares indicate that both the color and sequence are right.

From this, you can probably see that those high odds decrease drastically as you play—if you use your head. If you see two white squares, one black and one blank, you know that three colors are correct, but only one is in the right place. From there, you can see how that guess relates to previous guesses. Once you know where a color *isn't*, you should be able to piece the puzzle together and determine where each color *is*.

But Deduction isn't a piece of cake. Just guessing randomly won't do. You might even try keeping track of your deductions on paper to help you see a pattern. But if you just work it all out in your head, you're still likely to guess correctly within 12 turns—if you play the game right.



Deduction follows last month's Hangman in a series of classic public domain games revamped for ST BASIC by Stephen Everman and Paul Pratt of Hayward, California. Their flashy version of Star Trek will appear in the February, 1986 issue of Antic.

ATARI ST

ACTION PAK™

4 Atari ST™ Programs

1 Low Price!

DISK LABELER

Custom design your own unique 3.5 inch disk labels.

- ▶ Create professional-looking labels using three windows on screen. Fully mouse driven.
- ▶ Up to 38* files on each label, alphabetically, with monochrome monitor. Up to 18 files with color monitor.
- ▶ 35 borders and 4 type styles*.
- ▶ Includes 50 pin feed disk labels for 3.5 inch disks.
- ▶ Uses ST's full graphics capabilities*.

39.95

BANNER MAKER

Express yourself! Create original 1 to 4 line banners up to 72 characters in length.

- ▶ Includes 5 fonts. Custom design your own with Degas** or use any fonts compatible with Degas**.
- ▶ Left, right or center justification.
- ▶ Does not require "Action Pak (4 in 1)"** to print banners. Banner files can be given on disk or sent by modem.

TYPEWRITER

Great for addressing envelopes, filling out forms or writing short memos.

- ▶ Turns your ST into a line-at-a-time typewriter.
- ▶ Always handy! Resides in RAM as a desk-top accessory or runs as a stand alone program.

SYNFILE** CONVERTER

A real work-saver! Convert your 8-bit Synfile** files fast without having to reenter data.

- ▶ Creates ST files compatible with Hippo Simple**, Zoomracks**, DB Master One**, H & D Base**, DB Man**, dbOne**, or Regent Base**.
- ▶ Easy to use! Completely self-prompting. Just answer the simple questions.
- ▶ Requires modem or null modem.

Available at your local ST retailer. If you are unable to find it, then send coupon to: Action Software — 69 Clementina, Dept. ST, San Francisco, CA 94105. Please include \$3.00 shipping & handling. Calif. residents please add 6.5% sales tax.

Check enclosed Bill my credit card: VISA MC

Name _____

Address _____

City _____ State _____ Zip _____

Credit card no. _____ Exp. Date _____

Signature _____

We are looking for quality ST programs to publish.
Call (415) 974-6638.

*Requires Epson** or Epson** compatible graphics printer.
Other non-Epson** compatibles will print up to 18 file names, but
may not accept graphics.

**Action Software, Atari Corp., Batteries Included, Synapse Software, Quickview Systems, Mirage Concepts, Versasoft Corp., Oxxi, Inc., Regent Software and Epson Corp. respectively.

CIRCLE 070 ON READER SERVICE CARD

MichTron
is now the leading
publisher of software for
the Atari ST.

We have over 30 different programs
available on the ST: utilities made
for speed, efficiency, and simplicity;
games designed to be fast, colorful,
and exciting.

All reasonably priced, with more
coming every day. Write or
call for a free catalog.



576 S. Telegraph, Pontiac, MI 48053
Orders and Information (313) 334-5700
Dealer inquiries welcome

CIRCLE 043 ON READER SERVICE CARD

Mach 2 for the Atari ST

Mach2: multi-tasking Forth-83 development system

With everything you need to develop stand-alone applications, including: integrated GEM editor, full GEM and TOS support, Motorola assembler, debugger, demos, and our 300 pg. manual.

Mach 2 is interactive, so it allows you to experiment with the ST without going thru the compile-link-execute cycle. But when you do load in programs, look how we stack up:

Sieve	Compile	Link	Execute
Mach 2	0:00.7	0:00.0	4.41
Megamax C	1:10	0:24	3.83
Hippo C	0:58	1:37	8.4

C's w/o register variables

(That's three times the execution speed of other Forth's)
Note the turnaround time. It simply takes less time to develop your programs or finished products with Mach 2.

Palo Alto Shipping

PO Box 7430
Menlo Park, CA 94026
800/44-FORTH (Sales)
415/854-2749 (Dev. Support)
415/854-7994

all for only

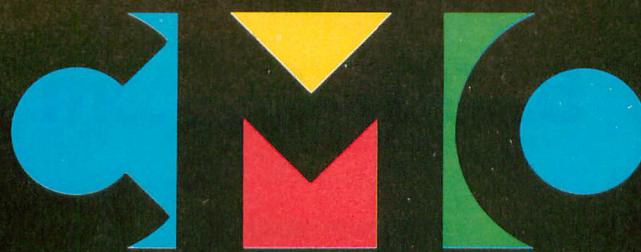
\$59 95*

plus \$5 S/H
CA Res add 6.5%
VISA/MC COD

Original Macintosh version \$99.95
Amiga version \$99.95
EPROM systems available, too

*Price will be \$99.95 as of Nov 1, 1986

CIRCLE 070 ON READER SERVICE CARD



COMPUTER MAIL ORDER

GUIDE TO ATARI PRODUCTS

Fall 1986



The Atari 800XL System Special

- Atari 800XL Computer
- Atari 1050 Disk Drive
- Epson Homewriter 10 Printer with Interface
- Box of 10 Generic Diskettes
- Atari CX40 Joystick

All this for the low, low price of

\$369⁰⁰

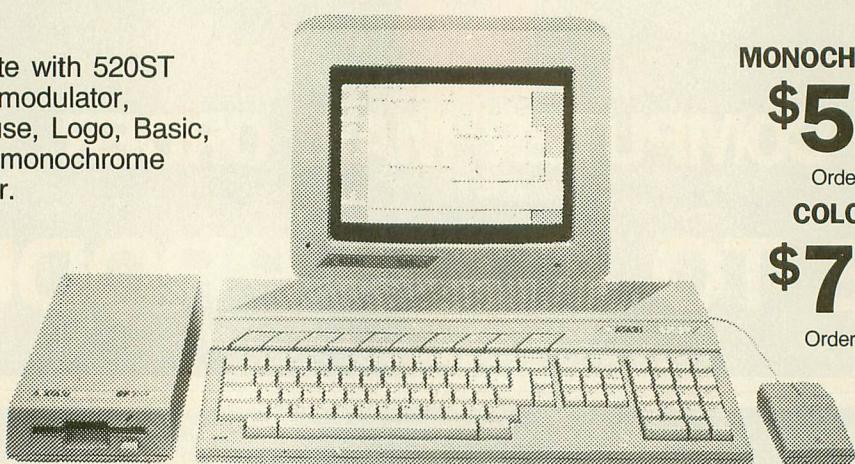
"ACT NOW, WHILE SUPPLIES LAST!"

**When you want to talk computers.
When you want to talk price.
Call toll-free: 1 800 233-8950.**

Outside the U.S.A. 717 327-9575 Telex 5106017898
CMO. 477 East Third Street, Dept. B612, Williamsport, PA 17701
All major credit cards accepted

The Atari 520ST System Package

Comes complete with 520ST computer with modulator, disk drive, mouse, Logo, Basic, 1st Word, and monochrome or color monitor.



MONOCHROME SYSTEM

\$599⁰⁰

Order No. AA520S

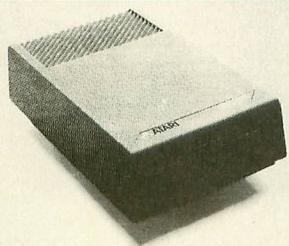
COLOR SYSTEM

\$779⁰⁰

Order No. AA520SC

“Call on the new Atari 520ST-FM”

SF314TM Microfloppy Disk Drive

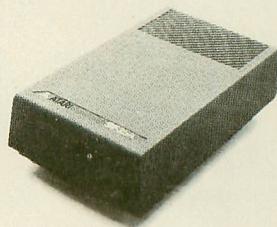


Like the 10ST's internal drive, the SF314 is a double-sided, double-density microfloppy disk drive. Add an additional floppy drive to your 1040ST and reap another 720K (formatted) of available disk storage capacity each time you switch on your computer.

\$219⁰⁰

No. AA314

SF354TM Microfloppy Disk Drive

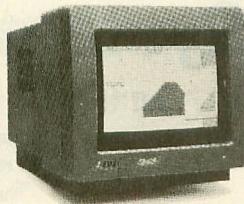


Suppose you want a second disk drive but don't need another 720K of disk storage space. Then the SF354 is just for you. It's a single-sided, double-density drive providing up to 360K (formatted) of storage on each 3 1/2-inch disk.

\$179⁰⁰

No. AA354

SM124TM High-Resolution Monochrome Monitor



A state-of-the-art monochrome monitor. When you purchase your 520ST or 1040ST systems perhaps you'll choose the color monitor. Well, why not add a high-resolution monochrome display to your system. For word and data processing, there's no clearer, sharper display.

\$189⁰⁰

No. AA5124

SC1224TM RGB Color Monitor



A high-performance RGB color monitor. The SC1224 faultlessly displays all 512 of the 1040ST's colors. No doubt its startling display of bit-mapped color graphics will knock your socks off.

\$Call

No. AA51424



Call toll-free: 1 800 233-8950.

Outside the U.S.A. 717 327-9575 Telex 5106017898

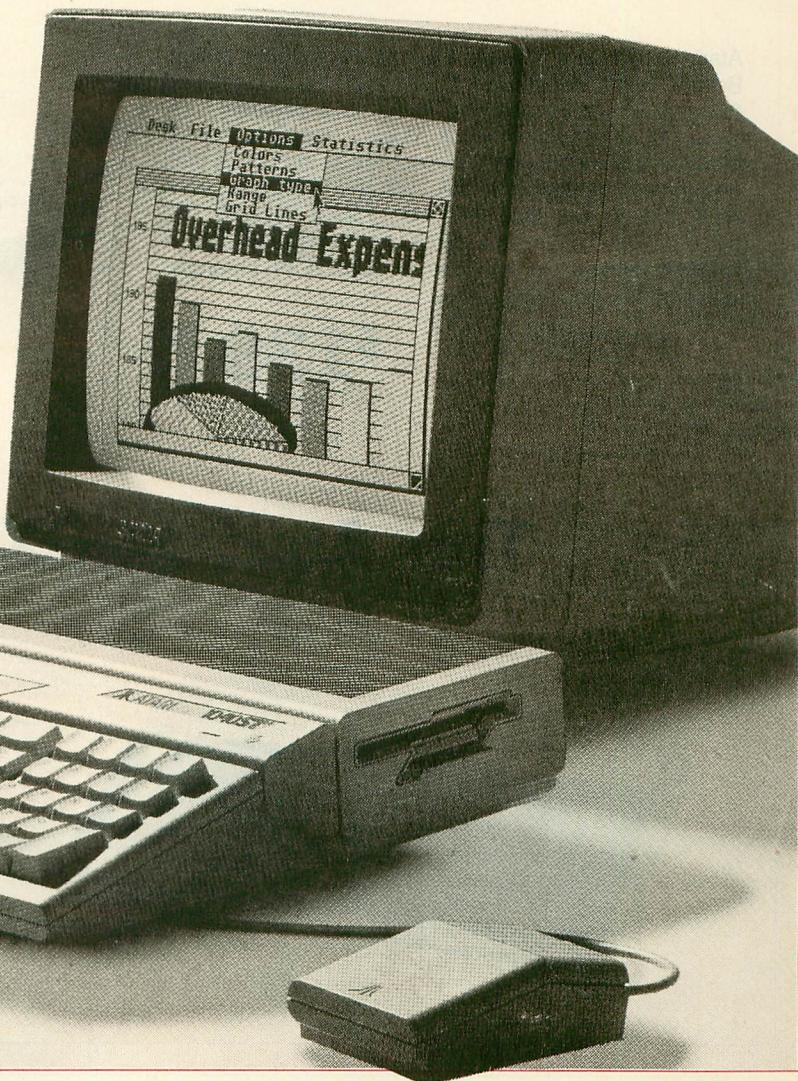
All major credit
cards accepted.

The 1040ST from Atari

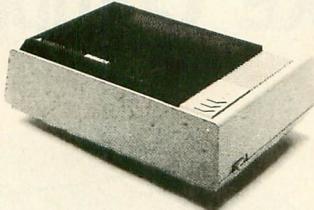
The first one megabyte computer system for under \$1000.

- Built-in 3½" double sided (720K drive)
- 1 Meg RAM
- 192K RAM w/TOS
- Bundled with Atari RGB monitor
- Includes ST language disk (Basic-Logo-Neochrome)
- Built-in power supply

\$979⁰⁰



DOT-MATRIX GRAPHICS PRINTER



Offering an array of print styles, character pitches, column widths and page-length options, the SMM804 Printer allows you maximum versatility in formatting your written work. Plus—it's uniquely designed to support the 1040ST's print screen utility to transfer hi-res designs and pictures from the computer directly to the printer.

No. AAXM804

\$189⁰⁰

HARD DISK DRIVE



Connecting this 20MB hard disk drive to your system lets you take advantage of the 1040ST's built-in, high-speed DMA channel (hard disk port). Data transfer (read/write) to and from the drive is virtually instantaneous. Think of it: high-speed data transfers and 20 Mbytes of disk storage—all at an incredibly low cost.

No. AA51620

\$729⁰⁰



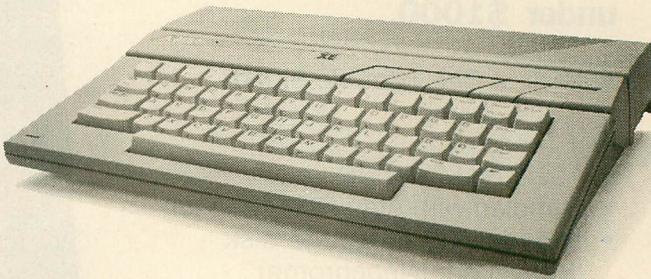
Call toll-free: 1 800 233-8950.

Outside the U.S.A. 717 327-9575 Telex 5106017898

All major credit cards accepted.

The Atari 130XE Computer

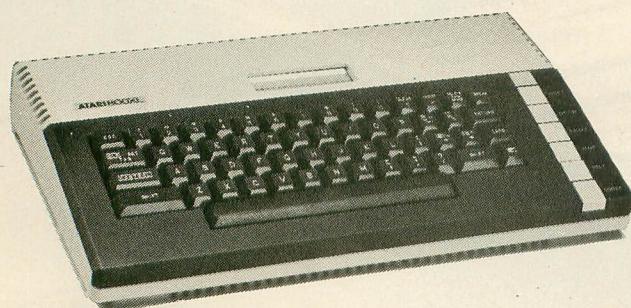
Atari has added a new slant to the world of computing. Beauty. Inside and outside. Brians and beauty combined to give you more of what you want from a personal computer. More graphics modes, colors, Random Access Memory, text modes, and independent sound voices than any other computer of its size. All in one stunning new body at a ver low price. The Atari 130XE has 131, 072 bytes of RAM. It uses the 6502C microprocessor and is software compatible with the thousands of programs available for the 800XL series.



\$139.00

No. AA130XE

The Atari 800XL Computer



A powerful, versatile tool for work and play, the Atari 800XL Home Computer features built-in Atari Basic programming language, a full-stroke keyboard, a Help key and an international character set—plus built-in 64K memory. This additional memory gives the user access to over 2,000 software programs, while an expansion connection proves the potential for adding sophisticated peripherals. Teamed with the right Atari programs and peripherals, the 800XL can teach, entertain, program and help manage a home or business.

\$79.99

No. AA800X

The Atari 65XE Computer

Atari has added a new slant to the world of computing. Beauty. Inside and outside. Brians and beauty combined to give you more of what you want from a personal computer. More graphics modes, colors, Random Access Memory, text modes, and independent sound voices than any other computer of its size. All in one stunning new body at a very low price. The Atari 65XE has 65,000 bytes of RAM. It uses the 6502C microprocessor and is software compatible with the thousands of programs available for the 800XL series.



\$89.99

No. AA65XE



Call toll-free: 1 800 233-8950.

Outside the U.S.A. 717 327-9575 Telex 5106017898

All major credit cards accepted.

SUPRA Hard Drives for Atari Systems

Hard Drive convenience for your Atari System. 10, 20 and 30 Meg hard drives available. Each includes controller, Atari interface, hard disk DOS, attractive case, cables and power supply.

No. SJ0007, **10MB for XL Series**

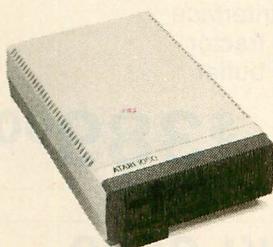
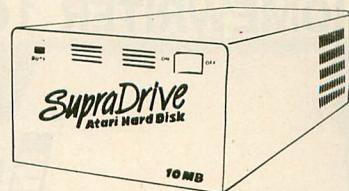
\$679⁰⁰

No. SJHD20ST, **20 MB for ST Series**

\$649⁰⁰

No. SJHD30ST, **30 MB for ST Series**

\$829⁰⁰



ATARI 1050 Disk Drive

A CMO Exclusive!
While they last.

\$129⁰⁰

No. AA1050

INDUS GT Disk Drive

The GT drive is compatible with the 400/800/1200 and XL series computers. Featuring full operation in either single or double density.

No. IADD **\$199⁰⁰**



MAXELL 5 1/4" Diskettes

Single
Sided,
Double
Density

No. MXD1

\$10⁹⁹

Box of 10



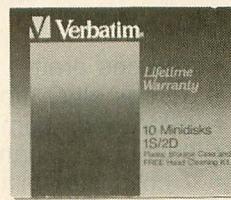
VERBATIM Single Sided, Double Density 5 1/4" Diskettes

Includes plastic storage case & head cleaner kit.

No. VE1

\$8⁹⁹

Box of 10

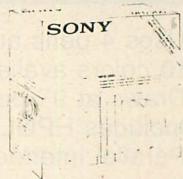


SONY Bulk Pack User's Group Special

50 Double Sided, Double Density 3 1/2" Mini Diskettes.

No. SCMFD2P

\$89⁹⁹



ICD Rambo XL

Turns your 800XL or 1200XL into a 256K System.

No. LAB04

\$39⁹⁹

ICD Happy Archiver

Provides the owner with Archiver utilities. A must for serious hackers.

\$36⁹⁹

No. AB03

ICD US Doubler

True double density and high speed for the 1050 drive.

No. AB02

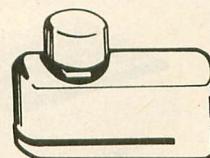
\$49⁹⁹

DATA SHARE Disk Notcher

Cuts uniform tabs in double sided diskettes, allowing use of both sides in single sides drives.

No. XNOTCH

\$6⁹⁹



BIB Disk Drive Head Cleaning Kit

\$14⁹⁹ **\$4⁹⁹**

No. HD-4 (3 1/2")

No. HD-5 (5 1/4")

Innovative Concepts Flip 'n File

Stand-up hard case holds 10 disks.

No. FF10D

\$1⁹⁹ ea.

ICD Sparta DOS Construction Set

\$29⁹⁹

No. AB04

AMARAY Diskette Storage Tubs

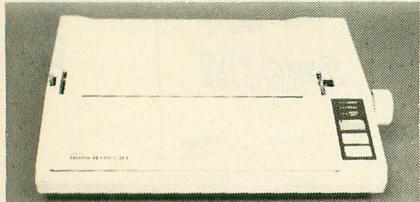
\$8¹⁹

No. ARDT3, (3 1/2") 30 Capacity

\$8⁴⁹

No. ARDT5, 5 1/4" 50 Capacity

EPSON HOMEWRITER 10



- 100 cps draft
- NLQ
- 80 column

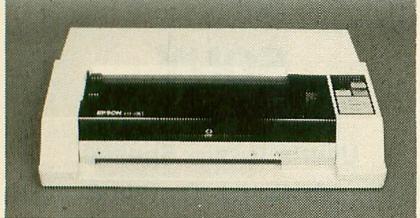
SPECIAL!

\$99.99

No. EPHW10

with purchase of PIC
Call CMO Sales Consultant
for proper interface.

EPSON HI-80

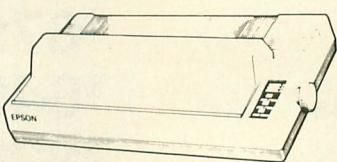


- Uses 4 pens at a time with 10 colors available
- Draws at 9" per second
- Includes HPGL
- Parallel interface

\$359.00

No. EPHI80

EPSON LX86



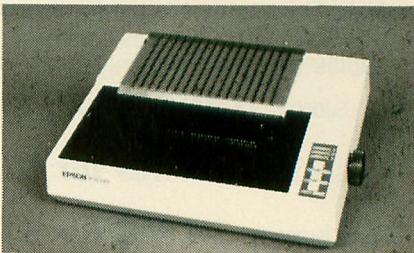
- 120 cps draft
- 16 cps in NLQ mode
- Parallel interface
- 80 column

NEW!

\$249.00

No. EPLX86

EPSON FX85

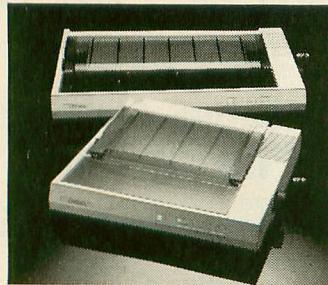


- 160 cps draft
- 32 cps in NLQ mode
- Parallel interface
- Optional tractor
- 8K RAM buffer

\$389.00

No. EPF85

CITIZEN MSP



- 40 cps NLQ
- Built-in tractor
- 1K buffer
- 160 cps draft

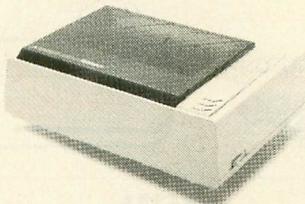
No. CZMSP10 (80 col.)

\$299.00

No. CZMSP15 (132 col.)

\$419.00

ATARI XMM801 (for XE & XL) XMM804 (for ST)



ATARI's NEW DOT MATRIX
GRAPHICS PRINTER

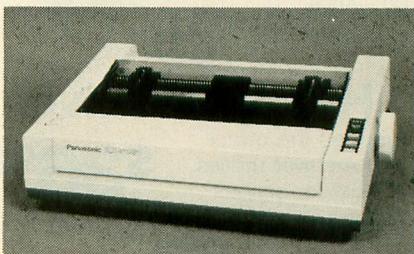
No. AAXM801

\$159.00

No. AAXM804

\$189.00

PANASONIC KX-1091

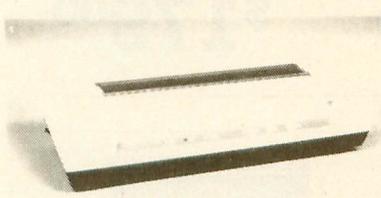


- 120 cps, multiple mode NLQ
- 80 column, 1K buffer
- Tractor and friction feed

\$229.00

No. PA1091

STAR LV1210 PRINTER

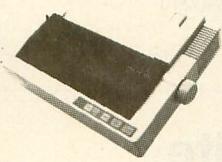


- 120 cps • IBM compatible
- Built-in tractor
- 80 column • Parallel Interface

\$189⁰⁰

No. SGLV1210

STAR NX-10 PRINTER

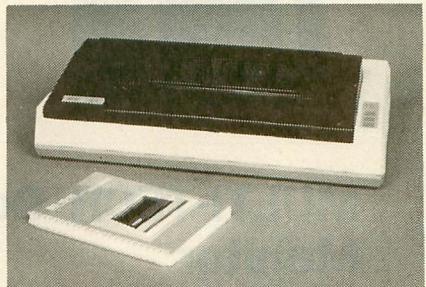


- 120 cps • Bi-direction
- Logic seeking
- IBM Character set
- Friction and Tractor feed

\$239⁰⁰

No. SGNX10

STAR SG-15 PRINTER

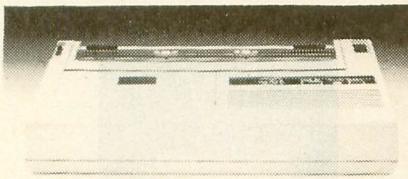


- 120 cps 5 16K Buffer
- Wide Carriage

\$399⁰⁰

No. SGSG15

OKIDATA OKIMATE 20

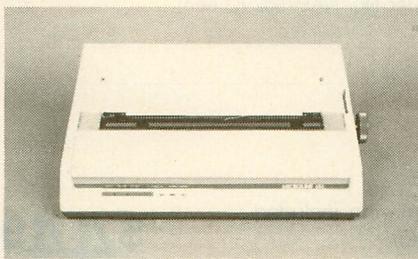


- Color Screen Print Software
- 80 cps Draft/40 cps NLQ
- 24 Element Print Head
- 80 Column, 8K Buffer

\$139⁰⁰

No. OK20
w/purchase of Interface

OKIDATA 182

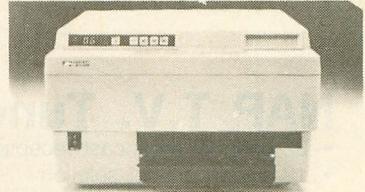


- 120 cps • 60 cps enhanced
- Adjustable pin feed
- Parallel Interface

\$219⁰⁰

No. OK182

CANON LASER LBP-8A1

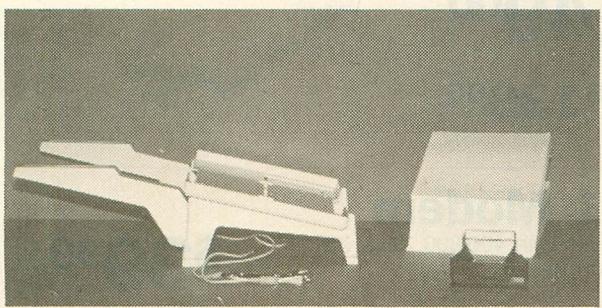


- 8 pages per minute
- High quality printing
- 16 fonts per page capability
- Diablo 630 emulation
- Parallel interface

\$1999⁰⁰

No. CCLBP8

“Don’t forget to order accessories for your printer.”



Printer Stands

No. CUUPS1, Curtis Universal Printer Stand

\$14⁹⁹

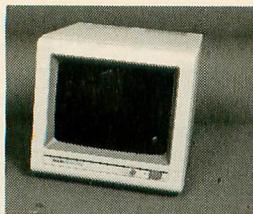
Paper

No. RF591, 8 1/2" x 11" Fan Fold

\$12⁹⁹

Ribbons - Please call a CMO sales consultant.

Interfaces - See page 9.



TAXAN Composite Color

- 14" Composite with audio
- Resolution 350x500
- Comp. video, Chroma & Luma input connections

Order No. TAC210

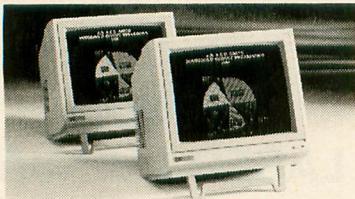
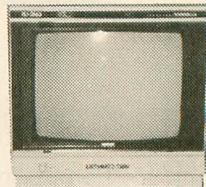
\$179⁰⁰

MULTI-TECH Composite Monitor

- 13" Composite Color with non-glare filter

Order No. MO131

\$159⁰⁰



NAP Amber/Green Composite

- 80 col. x 25 line
- 900x245 line res.
- 20 MHz band width
- Includes audio input

Order No. NAP7522 (Amber)
Order No. NAP7552 (Green)

\$79⁹⁹

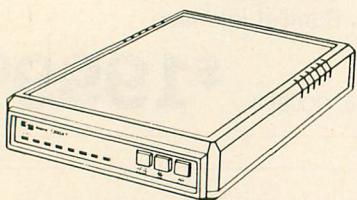
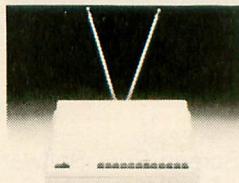
YOUR CHOICE

NAP T.V. Tuner

- 82 channel broadcast reception
- 12 station pre-set selection
- Rod antenna included
- Works with any composite color monitor

Order No. NAP7300

\$44⁹⁹



SUPRA 1200AT Modem

- Works on Atari 800XL & XE Computers
- 300/1200 Baud
- Hayes Command compatible
- Autoanswer/Autodial
- Smart Terminal Software
- Includes cables & AC adapter

Order No. SJ1200AT (LX & XE)
Order No. SJ1200ST (ST)

\$159⁰⁰

YOUR CHOICE

ANCHOR 520 Modem

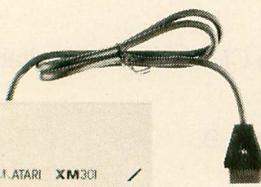
- 300/1200 BPS
- Autoanswer/Autodial
- Designed for the Atari 520ST

Order No. AN520

\$149⁰⁰

ANCHOR Volksmodem
No. ANVM

\$59⁹⁹ ANCHOR Volksmodem
300/1200 No. ANVM12 **\$139⁰⁰**



ATARI XM301 Modem

- Autoanswer/Autodial
- Works with 400-800 XL & XE
- Includes XE term program on disk

Order No. AAXM301

\$39⁹⁹

ATARI 835 Modem

Order No. AAB835

\$29⁹⁹

ATARI 850 Interface



Features 4 serial ports & one 8 Bit parallel port. Programmable baud rates. The original Atari interface.

\$109⁰⁰

Order No. AA850

SUPRA Interface

Parallel interface for Atari Computers. Allows daisy chaining of other peripherals.

Order No. SJ1150

\$44⁹⁹



Order No. SJ1151 (1200XL)

\$49⁹⁹

ICD PR Connection

Low cost, compatible replacement for the Atari 850 Interface. Allows the use of standard RS232 modems & Centronics parallel printers.

\$69⁹⁹

Order No. ALICPR

ICD Printer Connection

Baby brother to the PR Connection. Low cost interface for parallel printers.

\$44⁹⁹

Order No. ALICP



A CMO EXCLUSIVE

AXLON RAM Expansion for Atari 400 & 800 Computers

32K designed for Atari 400 & 800

Order No. ALA32

\$29⁹⁹

48K designed for Atari 400 only

Order No. ALA48

\$49⁹⁹

128K RAM Disk designed for 800 only

Order No. ALA128

\$119⁹⁹

CURTIS Special 6 Outlet Safe Strip

Order No. CUSP3

\$19⁹⁹

COMPUGUARD 4 Slot Surge/Spike Suppressor

Order No. CGCPS4

\$14⁹⁹

SPECTRAVIDEO Joysticks

Quickshot I

Order No. WC2010

\$6⁹⁹

SUNCOM Atari Replacement Joystick

Order No. AA405

\$2⁹⁹

Access Software Leader Board



\$29⁹⁹

No. ADAS01

Activision Music Studio

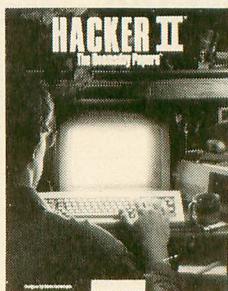
The Music Studio



\$44⁹⁹

No. ADAC01

Activision Hacker II Doomsday



\$39⁹⁹

No. ADAC02

Batteries Included D•E•G•A•S



\$29⁹⁹

No. ADBI01

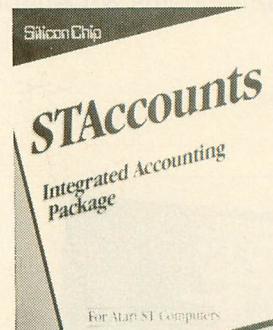
Cygnus Starfleet I



\$39⁹⁹

No. ADCY01

Ditek Software STA Accounts



For Atari ST Computers

\$189⁰⁰

No. ADDS01

Epyx Winter Games



\$29⁹⁹

No. ADEX01

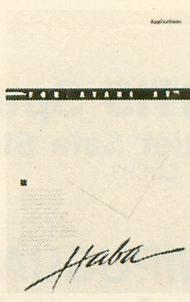
Haba Hippo C



\$44⁹⁹

No. ADHA01

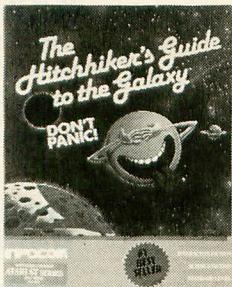
Haba HabaWriter



\$44⁹⁹

No. ADHA02

**Infocom
Hitchhiker's Guide
To The Galaxy**



\$29⁹⁹

No. ADIN01

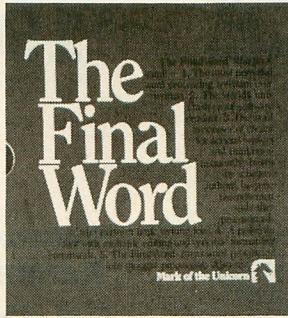
**Mark of the Unicorn
PC/Intercom**



\$89⁹⁹

No. ADMU01

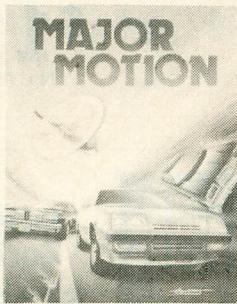
**Mark of the Unicorn
Final Word**



\$99⁹⁹

No. ADMU02

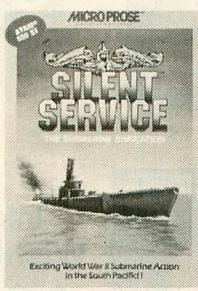
**Michtron
Major Motion**



\$29⁹⁹

No. ADMI01

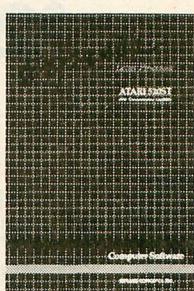
**MicroProse
Silent Service**



\$29⁹⁹

No. ADMP01

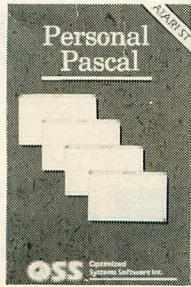
**Mirage Concepts
Express**



\$34⁹⁹

No. ADMC01

**Optimized Systems
Personal Pascal**



\$54⁹⁹

No. ADOS01

**Strategic Simulations
Phantasie**



\$29⁹⁹

No. ADSS01

**VIP Technologies
VIP Professional**

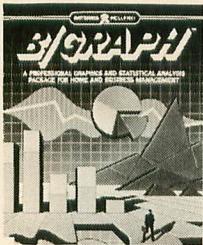


\$119⁰⁰

No. ADVP01



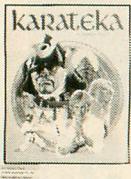
Accolade
Fight Night
\$19.99
No. AFAC01



Batteries
Included
B/Graph
\$44.99
No. AFBI01



Batteries
Included
Paperclip
\$37.99
No. AFBI02



Broderbund
Karateka
\$19.99
No. AFBB01



Broderbund
Bank Street
Writer
\$34.99
No. AFBB02

Print Shop

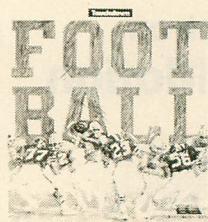
Broderbund
Print Shop
\$29.99
No. AFBB03

Print Shop
COMPANION

Broderbund
Print Shop
Companion
\$24.99
No. AFBB07



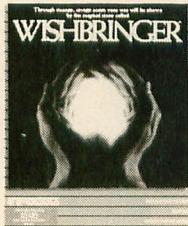
Cygnus
StarFleet I
\$34.99
No. AFCY01



Electronic Arts
Touchdown
Football
\$11.99
No. AFEA01



Epyx
World Karate
Championship
\$19.99
No. AFEX01



Infocom
Wishbringer
\$24.99
No. AFIF01



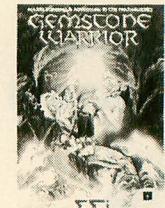
Infocom
Zork III
\$29.99
No. AFIF04



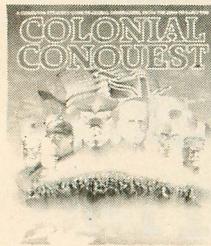
MicroProse
Top Gunner
\$19.99
No. AFMP01



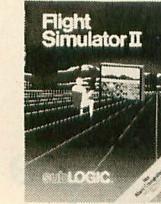
Origin Systems
Ultima IV
\$39.99
No. AFOR01



Strategic
Simulations
Gemstone
Warrior
\$24.99
No. AFSS01



Strategic
Simulations
Colonial
Conquest
\$29.99
No. AFSS02



Sublogic
Flight
Simulator II
\$37.99
No. AFSU02



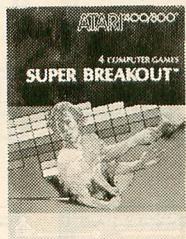
Sublogic
Scenery Disk 3
(San Fran-LA-Las Vegas)
\$14.99
No. AFSU03

FACTORY SEALED ROM CARTS FROM ATARI

YOUR CHOICE
7 99
each

No. AA4006

**SUPER
BREAKOUT**



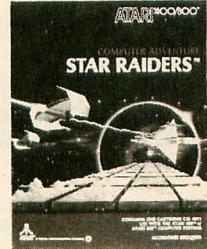
No. AA4007

**MUSIC
COMPOSER**



No. AA4011

**STAR
RAIDERS**



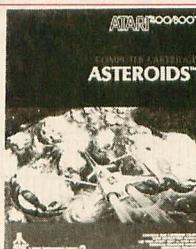
No. AA4012

**MISSILE
COMMAND**



No. AA4013

ASTEROIDS



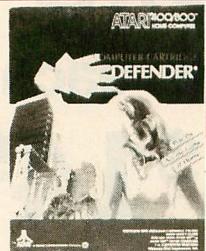
No. AA4022

PACMAN



No. AA4025

DEFENDER



No. AA4527

QIX



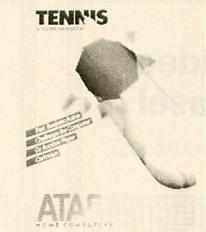
No. AA8030

**E.T. PHONE
HOME**



No. AA8042

TENNIS



No. AA8043

**MS
PACMAN**



No. AA5047

TIMewise
Diskette Version



BEST SELLING ATARI SOFTWARE AT INCREDIBLE SAVINGS

No. AA8036

ATARIWRITER
\$24⁹⁹

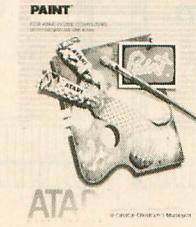


PLUS VERSION
39⁹⁹

PAINT

No. AA5048 (Disk)

10⁹⁹

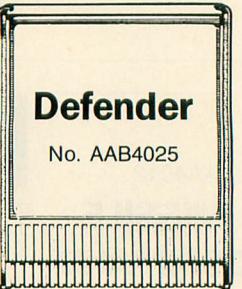
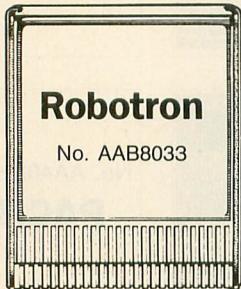
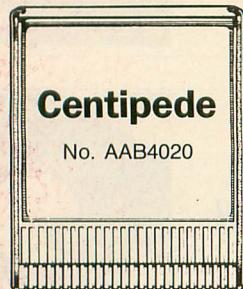
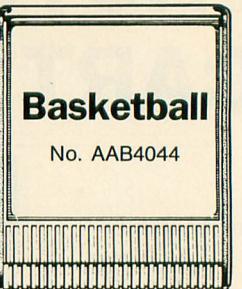
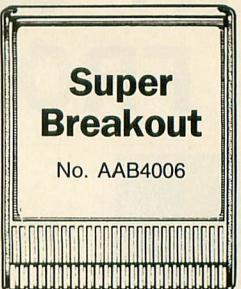
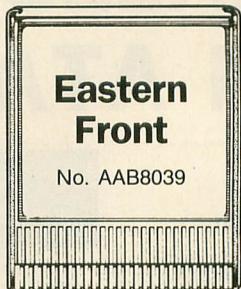


**MUSIC
PAINTER**

No. AA5081 (Disk)

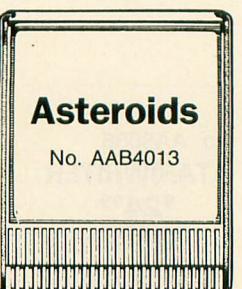
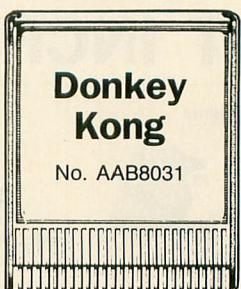
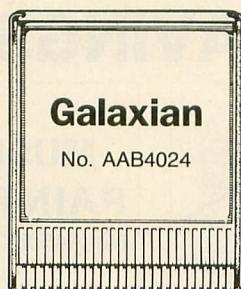
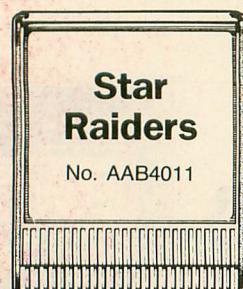
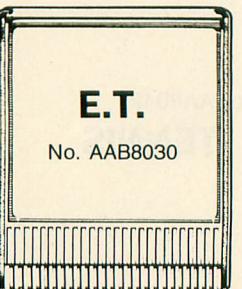
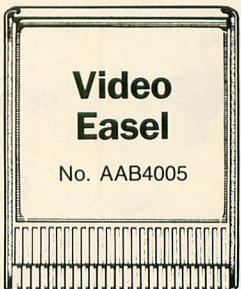
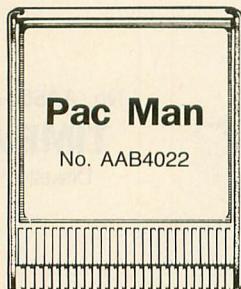
14⁹⁹





**Loose, Unboxed
Atari ROM
Cartridges**

**\$349 each
5 for \$1499**



Rocklan Game Programs



Order No. RKA01D, AT Deluxe (disk)
 Order No. RKA02R, Gorf (ROM)
 Order No. RKA03R, Wizard of Wor (ROM)
 Order No. RKA04D, AT Anti/Sub (disk)
 Order No. RKA05R, Journey to Planet (ROM)
 Order No. RKA07R, Diamond Mine (ROM)

YOUR
CHOICE

\$3.99
each

Avalon Hill Programs



Order No. ACA409, Stocks & Bonds
 Order No. ACA435, Legionnaire
 Order No. ACA452, Gypsy
 Order No. ACA457, T.G.I.F.
 Order No. ACA468, Divex
 Order No. ACA450, Vorrax

YOUR
CHOICE

\$3.99
each

Atari Program Exchange



Order No. AEA003, Avalanche
 Order No. AEC148, Counter
 Order No. AED063, Downhill
 Order No. AEL096, Letterman
 Order No. AES120, Salmon Run
 Order No. AET180, Typo Attack

YOUR
CHOICE

\$1.99
each



Hacker's Special

Atari 410 Cassette Recorders

(Not in working condition)

**2 for
\$9.99**

Order No. AAB410P



**Visicorp
VisiCalc
\$24.99**

Order No. AA5049



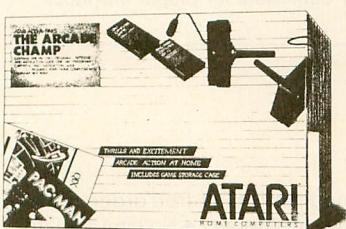
**Synapse
Syntrend
\$5.99**

Order No. AA2032



**Atari
Invitation to
Programming
\$4.99
ea.**

No. AA4101, INTRO. I
 No. AA4106, INTRO. II
 No. AA4117, INTRO. III



ARCADE CHAMP

Package includes Pac Man Cartridge and Qix Cartridge as well as a 6 Rom Cart Holder. Joysticks not included.

\$7.99

No. AA7102

No. DYACW	Designware Codewriter.....	\$19.99
No. AA9035	Mickey in the Great Outdoors (Cassette)....	\$3.49
No. AA4112	States & Capitals.....	\$1.99
No. AA4107	Biorhythm.....	\$1.99
No. AA4102	Kingdom.....	\$1.99
No. AA4104	Mailing List.....	\$1.99
No. AA4121	Energy Czar.....	\$1.99
No. AA4129	Juggles Rainbow.....	\$1.99
No. AA4115	Mortgage & Loan Analysis.....	\$1.99
No. AA6006	Counseling Procedure.....	\$1.99
No. AAC81	Atari 810 Dust Covers.....	\$1.99
No. AA4126	Speed Reading.....	\$4.99
No. AA14385	Inside Atari Basic.....	\$5.99
No. AA14746	Atari TV Switch Box.....	\$2.49

BUSH Computer Furniture



Table Order No. BU120

\$49⁹⁵

Hutch Order No. BU122

\$39⁹⁵

ATARI 1020 Printer



\$29⁹⁹

Order No. AA1020

ATARI 835 Modem

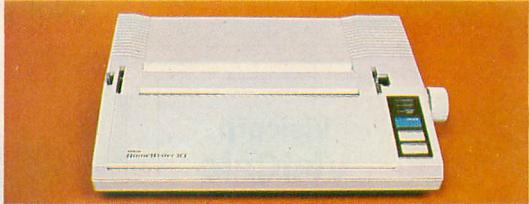


- 300 BPS, Autodial (pulse)
- Included power supply & phone jack
- Direct connect to Atari I/O

\$29⁹⁹

Order No. AAB835

EPSON Homewriter 10



- 100 cps Draft
- NLQ
- 80 Column

\$99⁹⁹

Order No. EPHW10

WITH PURCHASE OF "PIC"

Call CMO Sales Consultant for proper interface.

CMO. Policies and particulars.

Next day shipping on all in-stock items. • Free technical support from our own factory-trained staff. • Toll-free order inquiry. • No surcharge on VISA or MasterCard orders. • Credit cards will not be charged until the order is shipped. • No limit and no deposit on COD orders. • No sales tax on orders shipped outside PA. • No waiting period for cashier's checks.

SHIPPING. Add 3% (minimum \$7.00) shipping and handling on all orders. • Larger shipments may require additional charges. • Returned items may be subject to a restocking fee. • All items subject to availability and price changes.

EDUCATIONAL INSTITUTIONS: 1 800 221-4283

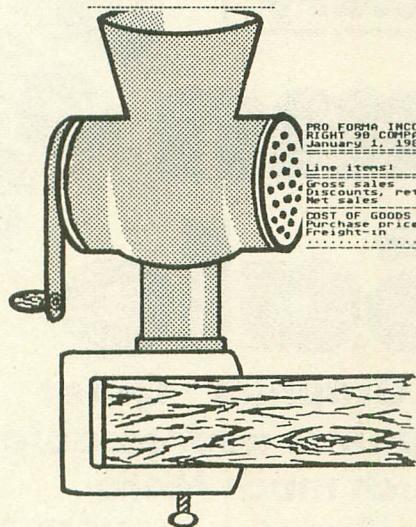


**When you want to talk computers.
When you want to talk price.
Call toll-free: 1 800 233-8950.**

Outside the U.S.A. 717 327-9575 Telex 5106017898
CMO. 477 East Third Street, Dept. B612, Williamsport, PA 17701
All major credit cards accepted

PRO FORMA INCOME STATEMENT - FIRST YEAR
RIGHT 90 COMPANY
January 1, 1985 to December 31, 1985

Line items	Month: Jan-85
Gross sales	\$38,000
Discounts, returns & allow.	500
Net sales	37500
COST OF GOODS SOLD	
Purchase price	22000
Freight-in	500
.....



PRO FORMA INCOME STATEMENT - FIRST YEAR
RIGHT 90 COMPANY
January 1, 1985 to December 31, 1985

Line items!	Month: Jan-85	Feb-85	Mar-85	Apr-85	May-85	Jun-85
Gross sales	\$38,000	\$38,000	\$38,000	\$38,000	\$38,000	\$38,000
Discounts, returns & allow.	500	500	500	500	500	500
Net sales	37500	37500	37500	37500	37500	37500
COST OF GOODS SOLD						
Purchase price	22000	22000	22000	22000	22000	22000
Freight-in	500	500	500	500	500	500
.....

© 1986

BY KEN STAILEY

06

- PRINT TEXT & VIP FILES SIDEWAYS
- 5 DIFFERENT CHARACTER SIZES
- ON-SCREEN PREVIEW OF SIDEWAYS PRINTED FILE
- USE CONTINUOUS OR SINGLE SHEET PAPER
- CREATE POSTER SIZE SPREADSHEETS
- SUPPORTS EPSON, SMM804, NEC, PROWRITER AND COMPATIBLE PRINTERS

US \$29.95



P.O. Box 5228
Springfield, Virginia 22150
Telex 269728 XLNT UR

XLEnt
Software

MEGAFONT ST

© 1986

ST Version By
Randy Dellinger

The Ultimate Printer Utility

For
Atari
ST
Series

Supports
SMM804, NEC,
Prowriter
Epson and
compatible
printers

Special Lister - 8 x 8 Fonts

This is FANCY2 font. This is BLOCK font.
This is FANCY3 font. This is SPACE font.
This is MODERN font. This is STYLISH font.

D.E.G.A.S. Fonts

This is COMPUTER font. This is COMPUTER font.
This is NORMAL font. This is OLDE font.
This is OLD ENGLISH font.

CLEAR ROLL UP
INVERT ROLL DOWN
UNDO ROLL LEFT
RESET ROLL RIGHT
COPY GRID



LOAD FONT
SAVE FONT
QUIT



Built-in Font Editor

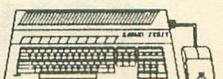
The Most Fun You've Ever
Had From Your Printer!

- FIRST WORD COMPATIBLE (Print First Word Files with Multiple Font Styles)
- PRINT TEXT FILES WITH GRAPHICS

XLEnt
Software

P.O. Box 5228
Springfield, Virginia 22150
(703) 644-8881
Telex 269728 XLNT UR

Dump Graphics and Typesetter Icons



- GEM BASED

US \$39.95

CIRCLE 075 ON READER SERVICE CARD

Famous National Brand

Commodore® Atari® Apple® IBM®

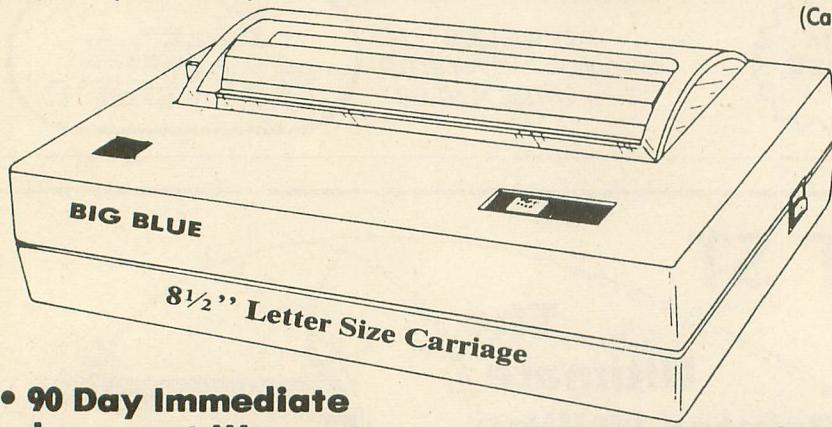
**We Like this Printer so much
We Bought Out the Factory.**

\$39.95 80 Column Printer Sale

• Word Processing • Program Listings • Graphics • Quiet Operation • Upper and Lower case • All points addressable Graphics • Underline • Enlarged • Much much More

Complete your set up with a Printer Stand **SALE \$14.95** and Complete Printer Care Kit **SALE \$19.95**

(Care Kit will add time to your printers life span.)



Super Print Quality

This printer was made by Canon® for the IBM PC and PCjr. The Big Blue printer comes ready to hook up to the serial port of the IBM® PC jr. Plus with low cost adapter cables you can connect the Big Blue printer to the Commodore® 64, 128, IBM® PC, IBM® XT, IBM® AT, IBM® Compatibles, Apple® II, IIe, IIc, Apple® IIc, Apple® IIe, and Apple® IIgs, plus many more.

• 90 Day Immediate Replacement Warranty

• 15 Day Free Trial-Satisfaction or Money Back

Now you can have a full fledged 8 1/2" letter size 80 column printer for less than the cost of a large box of paper. This printer uses advanced dot matrix, heat transfer technology to print upper and lower case (with true lower descenders), underline, enhanced, all points addressable graphics (works with Printshop) plus More. Print out pictures, program listings, wordprocessing pages, graphics and more. Perfect for the homeowner or student and definitely affordable. Fantastic Printer at an unbeatable price. List \$199.00 Sale \$39.95

Paper (2 Rolls) List \$19.95 Sale \$5.95

Intelligent Commodore Interface— Allows you to connect the Big Blue printer to the printer port of the Commodore 64 and 128 computer. Print Commodore graphics, use Printshop, Word processors and more... List \$49.95 Sale \$19.95

Intelligent Atari Interface— Allows you to connect the Big Blue printer to Atari computers (except 1200). Print Atari graphics, Printshop, word processors, and more... List \$49.95 Sale \$19.95

RS-232 Adapter— Adapts the Big Blue printer to be used with any IBM® PC, AT, XT, PCjr, Apple® II series RS-232 port. List \$19.95 Sale \$9.95

Laser128, Apple IIc interface— List \$24.95 Sale \$12.95

Printer Stand List \$24.95 Sale \$14.95 - Complete Printer Care Kit List \$29.95 Sale \$19.95

IBM, Apple, Canon, Commodore, Atari are trademarks of International Business Machines, Apple Computer, Canon Inc., Commodore Business Machines, Atari Inc. Respectively.

Add \$7.50 for shipping, handling and insurance. Illinois residents please add 6 1/2% tax. Add \$15.00 for CANADA, PUERTO RICO, HAWAII, ALASKA and APO-FPO orders. All orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES, EXCEPT CANADA. Enclose Cashier Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail! Prices & Availability subject to change without notice. VISA — MASTER CARD — C.O.D. C.O.D. on phone orders only

COMPUTER DIRECT

We Love Our Customers

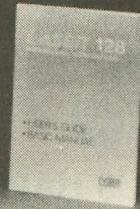
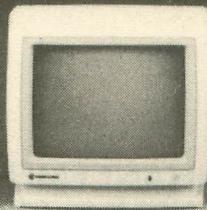
22292 N. Pepper Rd., Barrington, Ill. 60010

312/382-5050 to order

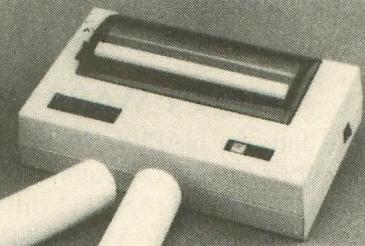
Complete Apple® Compatible Word Processing System

Home • Business • Word Processing

Complete System
\$499.00



- 15 Day Free Trial
- 90 Day Warranty



Look At All You Get For Only \$499.00

- Laser 128 Apple Compatible Computer
- Big Blue 8½" Letter Size 80 Column Printer
- 9" Samsung Green Screen Monitor
- Magic Window IIe Word Processor
- Magicalc Spreadsheet
- Magic Memory Data Base
- Laser 128 Printer Interface
- 2 Rolls of Paper

Comparable Apple System (\$2495.00)

	List Price
\$499.00	\$499.00
199.00	199.00
129.95	129.95
150.00	150.00
150.00	150.00
60.00	60.00
19.95	19.95
19.95	19.95

Save
Over
\$700.00

1227.85 All 8 Pieces only \$499.00

Magic Window IIe Word processing is easy and more efficient because of a simple-to-read menu system and editing commands. Many powerful features of professional quality programs and more. Supports virtually all major printer functions. Operates with most 80-column video cards or 40/70 column no-hardware modes.

Magicalc Rated as the best electronic spreadsheet on the market for Apple®. The speed with which Magicalc solves number problems allows you to accurately analyze decisions beforehand. Supports multiple RAM cards of most manufacturers in any combinations up to a full 512 K.

Magic Memory File anything, any way you want to: names, addresses, important numbers, dates and notes. Your information is organized simply, easy to maintain, and available instantly. Supports all popular printers and video cards.

Apple® is a registered trademark of Apple Computer Inc.

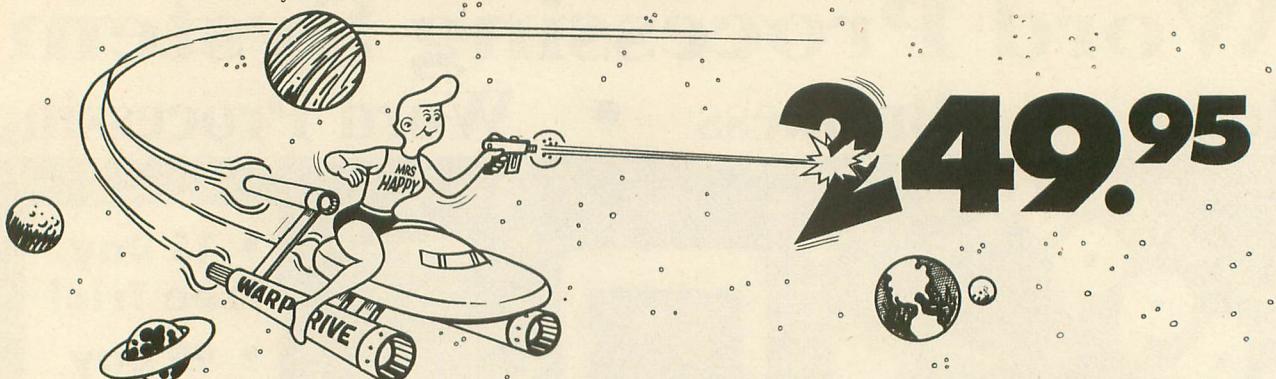
Add \$30.00 for shipping, handling, and insurance. Illinois residents please add 6% sales tax. Add \$60.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO/FPO orders. All orders must be in U.S. Dollars. WE DO NOT EXPORT TO OTHER COUNTRIES EXCEPT CANADA. Enclose Cashier Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail. Prices & Availability subject to change without notice.

VISA -- MASTER CARD -- C.O.D.

C.O.D. on phone orders only.

Computer Direct
We Love Our Customers
22292 N. Pepper Rd., Barrington, Illinois 60010
312/382-5050 to order

ATARI DISK DRIVE OWNERS . . . HAPPY BLASTS RETAIL PRICE—ORDER TOLL FREE!



249.95

**THE FAMOUS HAPPY ENHANCEMENT NOW ONLY \$149.95
for 1050 order number HC1A, for 810 order number HC8A**

Makes your disk drive read and write faster, and allows you to execute the HAPPY WARP SPEED SOFTWARE. Available only for ATARI 1050 and 810 disk drives. 1050 version allows true double density plus the original single and enhanced density. PRICE INCLUDES WARP SPEED SOFTWARE BELOW, installation required.

HAPPY WARP SPEED SOFTWARE REV 7 (not sold separately)

Includes the famous HAPPY BACKUP and COMPACTOR which are the most powerful disk backup utilities available for your ATARI computer, plus MULTI DRIVE which allows high speed simultaneous reading and writing with up to 4 HAPPY ENHANCED drives, plus SECTOR COPIER which is the fastest disk copier that supports the 130XE RAMDISK, plus the WARP SPEED DOS which improves ATARI DOS 2.0s to allow fastest speed, plus HAPPY'S DIAGNOSTIC which allows comprehensive disk drive testing.

HAPPY 1050 CONTROLLER \$64.95 order number HC2A

For use with HAPPY ENHANCED 1050 disk drives only. Allows easy access to HAPPY 1050 slow and fast speeds and ultimate control of disk drive write protect, including writing to disk back side and protecting valuable data disks. Printed circuit board has switches and write protect indicator LED, installation required.

GET YOUR FAVORITE HIGH SPEED DOUBLE DENSITY DOS

Both of these disk operating systems support the fastest speed with both HAPPY 810* and 1050, and with HAPPY 1050 you get true double density. WARP SPEED DOS XL is HAPPY's own version of OSS DOS XL, and includes, under cartridge, under ROM and AXLON RAM disk version, and is order number HC4A at \$29.95. TOP DOS version 1.5 from ECLIPSE SOFTWARE has more menu driven features, operates in all three densities, supports the 130XE RAMDISK, and is order number HC6A at \$39.95. *Note: 810 requires upgrade below.

810 VERSION 7 UPGRADE \$49.95 order number HU3A -XXXX

Allows older 810 HAPPIES to use newer software. Includes custom plug in IC and rev 7 WARP SPEED SOFTWARE. Same price for all HAPPY 810s registered or not. When ordering replace XXXX in part number with the serial number of your HAPPY COMPUTERS manufactured 810 board, or with a 2732 or 2532 which corresponds to the EPROM part number in your HAPPY 810 socket A102 of your side board modified HAPPY (not made by HAPPY COMPUTERS), installation required. Upgrade not needed for new 810 HAPPYS and serial number over 8000.

SUPER PACKAGE SPECIALS

Get a HAPPY 1050 ENHANCEMENT and CONTROLLER and WARP SPEED DOS XL for just \$199.95 order number HS5A, or get the same with TOP DOS 1.5 instead of DOS XL for just \$214.95 order number HS7A. If you already have the 1050 ENHANCEMENT you can get the HAPPY 1050 CONTROLLER and WARP SPEED DOS XL for \$74.95 order number HXL9A, or get the HAPPY 1050 CONTROLLER and TOP DOS 1.5 for just \$84.95 order number HTD9A. For other specials and dealer pricing call (408) 779-3830.

All prices include UPS shipping in USA, add \$10.00 for shipment outside USA. California residents add sales tax. No extra charge for credit cards or COD, VISA or MASTERCARD accepted. Our toll free number is an order taking service, not our line. To ORDER ONLY call (800) 538-8157 outside California, or (800) 672-3470 inside California, ask for extension 817 and have your credit card, part number and quantities ready. Toll free hours 6 am to 12 pm Mon.-Fri., 8 am to 8 pm Sat. & Sun., Pacific Time. For answers to questions call HAPPY COMPUTERS at our number below. Office hours 9-5 Mon.-Fri. Pacific Time.

HAPPY COMPUTERS, INC. * P.O. Box 1268 * Morgan Hill, CA 95037 * (408) 779-3830

ST PRODUCT NEWS

ST Reviews

ATARI ST BASIC TRAINING GUIDE

Abacus Software
P.O. Box 7219, Dept. A9
Grand Rapids, MI 49510
(616) 241-5510
\$16.95
(\$14.95 optional disk)

CIRCLE 252 ON READER SERVICE CARD

Reviewed by David Plotkin

The **Atari ST BASIC Training Guide** is a first-class text for ST BASIC users. It is clear, thorough, well-written and remarkably free of errors and typos. It doesn't address some advanced features of ST BASIC, but does a good job on the subjects covered.

The first chapter leads you step by step through the process of creating a program, beginning with fundamentals such as the concepts of programs and algorithms. It continues with flowcharts, documentation, introduction to bits and bytes, and the hexadecimal system.

Successive chapters explain how to use various ST BASIC commands. The sections are short and easy to digest, just right for the beginner. Each chapter includes sample programs which adequately illustrate the concepts being explained. At various points in the chapter there are problems to test your understanding of the material.

(Don't worry, the answers are in back.)

The Guide progresses from easier commands such as arithmetic and random numbers to more advanced commands such as IF/THEN, FOR/NEXT, GOSUB and GOTO. Good sections cover multi-dimensional arrays, disk files, sound and graphics, and using GEM VDI and AES commands for special effects. A good reference section lists the ST BASIC commands alphabetically, along with numerous examples.

This book does not go into great depth about the commands. Details of file structure and use of sequential and random files are not explained, and no mention of the complex WAVE command is made. The concept of partially RESTOREing data is also ignored.

The one serious error I spotted is in the reference section. Under the explanation of the NEW command, it says that the program still remains in memory after the NEW command is invoked. The novice who believes this is in for quite a nasty surprise, because NEW completely erases the program from memory.

I like **ST BASIC Training Guide**. It does a good job of introducing the user to ST BASIC programming fundamentals. It also provides a valuable reference section for the more advanced user.

eSTE CLOCK CARTRIDGE

BigFoot Systems
2708 E. Lake Street
Minneapolis, MN 55406
(612) 722-9515
\$48.50

CIRCLE 257 ON READER SERVICE CARD

Reviewed by Patrick Bass

The **eSTE Clock** by BigFoot Systems gives the ST a real-time clock with a five-year lithium battery backup. Plug the gray eSTE Clock cartridge into the cartridge port on the left side of your computer and copy the CLK.ACC file onto your start-up disk. The correct time and date will now be displayed on the desktop whenever you boot your ST.



Our eSTE Clock Cartridge came with the correct time and date already programmed in. To actually set the time yourself, a small program called SETCLK.PRG is provided. Double-clicking on this icon allows you to set

continued on next page

520ST RAM \$189 NO SOLDERING

- Simply open the case and plug the **easiest RAM™** board into 2 existing sockets for **1 Megabyte Total.**
- Upgrade to **2 Megabytes** by installing soon-to-be available 1 Meg RAM chips in place of the present 256K RAM chips now being used to upgrade memory. Note a larger power supply will be required to support over 1 Megabyte of memory total.
- Upgrade all the way to **4 Megabytes** by installing 16 more 1 Meg RAM chips and sockets into positions that are already provided for on our standard board.

Add \$20 if you want us to install the extra RAM sockets at this time.

1 year warranty // UPS ground free // VISA & M/C 5% // C.O.D. \$3



Texas residents + 6.125%
Overseas shipping + \$8

Fine micro peripherals since 1979

Box 18093 Austin, TX 78760 (512) 451-5874

CIRCLE 084 ON READER SERVICE CARD

CUSTOM 810 DISK DRIVE — \$95.00 ASSEMBLED ON ACRYLIC BASE — NO CASE FULLY FUNCTIONAL — XL COMPATIBLE — INCLUDES I/O CABLE & POWER SUPPLY

800/400 MODULES		810 MODULES	MANUALS	POWER PACKS	SERVICE RATES
NEW PARTS COMPLETE WITH IC'S		810 Side Board \$29.50	SAM'S Service Manuals for 800 or 400 or 800XL or 130XE \$19.50 ea.	Replacement Transformer for: 800/400, 810, 1050, 1200XL, 1020 \$14.50	Flat Service Rates below include Parts & Labor, 60-Day Warranty
\$9.50 EA.		810 Side with Data Sep \$39.50	520ST Service Manual \$39.50		800 \$39.50
All Modules Complete with IC's		810 Power Board \$15.00	Inside Atari Basic \$5.00		850 \$39.50
		810 Analog Board \$10.00	Pilot Primer \$5.00		600XL \$49.50
		Data Separator \$12.50	ST-Machine Language \$17.50		1200XL \$49.50
INTEGRATED CIRCUITS		600XL 64K Upgrade \$29.95	ST-GEM Programming \$17.50		810 \$69.50
\$4.50 EA.		C021697 \$10.00	ST-Tricks & Tips \$17.50		800XL \$49.50
All Antic C01296		Fastchip for 800/400 \$15.50	ST-Internal \$17.50		1050 \$85.00
All Pokey C01294		1050 FDC 2793 \$19.50			800 Keyboard Repair \$25.00
All PIA C014795		850 Interface with Case \$12.00			Above units repaired or exchanged with rebuildable exchange. Include \$7.00 return shipping and insurance.
All CPU C014806		Numeric Keypad \$15.00			
All Delay C010444		850 or PR Printer Cable \$16.50			
DISK DRIVE		BOARD SETS	CONNECTORS	SOFTWARE	
CUSTOM 810 DRIVE		New Parts complete with IC's	I/O 13PIN PC Mount \$4.50	Atari Joystick \$7.00	10K Rev. "B" O.S. Upgrade for older 800/400's
Fully operational 810 mounted on acrylic base. No case. Includes I/O cable and power supply.		800 4 PIECE BOARD SET	I/O Cable Plug Kit \$4.50	O.S.S. Action \$58.00	End printer/disk drive timeouts and OTHER ERRORS. Many new programs require Rev. B. Type the following peek in Basic to see if you have Rev. B. PRINT PEEK(56383). If the result equals 56 you have the old O.S. Three Chip ROM set with instructions \$7.50. Complete 10K Rev. B module \$9.50
\$95.00		Includes 800 Main, CPU, 10K ROM, and Power Board \$28.50	30 Pin Cart. Socket \$4.50	O.S.S. Mac/65 \$58.00	
400 3 PIECE BOARD SET		810 BOARD SET	Editor/Assembler Cartridge	O.S.S. Basic XE \$58.00	
All Includes 400 Main, CPU and Power Supply Board \$20.00		Sideboard with Separator, Rear Power and Analog Boards \$57.50	Write your own High Speed 6502 Language Programs.	O.S.S. Basic XL \$42.00	
			Written by Atari. Works with all Atari Computers except ST.	ST-O.S. Pascal \$68.00	
			Manual not included \$10.00	Donkey Kong Cart \$5.00	
			Cart. w/Atari Roots \$22.95	Pac-Man Cartridge \$5.00	
AMERICAN TV		BASIC CARTRIDGE	Editor/Assembler Cartridge	Eastern Front Cart \$5.00	
Mail Order and Repair 15338 Inverness St., San Leandro, CA 94579 Business Address 1988 Washington Ave., San Leandro, CA 94577		Basic Rev. "A" Cartridge works with all Atari Computers except ST. Includes manual.	Crossfire Cart \$5.00	Crossfire Cart \$5.00	
NO MINIMUM ORDER! We accept money orders, personal checks or C.O.D.s. VISA, Master/Card okay. Credit cards restricted to purchases over \$20.00. No personal checks on C.O.D. — Shipping: \$4.00 shipping and handling on orders under \$150.00. Add \$2.00 for C.O.D. orders. California residents include 6 1/2% sales tax. Prices subject to change without notice.		800XL Owners Note! Use this Cartridge while programming to eliminate the severe errors in the Built-in "B" Basic \$10.00	Chicken Cartridge \$5.00	Chicken Cartridge \$5.00	
Much more! Send SASE for free price list.			Clown & Balloon Disk \$5.00	Clown & Balloon Disk \$5.00	
Atari is a registered trademark of Atari Corp.			Stratos Disk \$5.00	Stratos Disk \$5.00	
			Serpentine Disk \$5.00	Serpentine Disk \$5.00	
			Steller Shuttle Disk \$5.00	Steller Shuttle Disk \$5.00	
			The Factory Disk \$5.00	The Factory Disk \$5.00	
			Spanish Lessons \$7.50	Spanish Lessons \$7.50	
			Basic Cartridge \$10.00	Basic Cartridge \$10.00	
			Editor Assembler Cart \$15.00	Editor Assembler Cart \$15.00	
			Q*Bert Cartridge \$10.00	Q*Bert Cartridge \$10.00	
			Popeye Cartridge \$10.00	Popeye Cartridge \$10.00	
			Kindercomp Cart \$10.00	Kindercomp Cart \$10.00	
CALL TOLL FREE		1-800-551-9995	IN CA CALL 415-352-3787		

CIRCLE 009 ON READER SERVICE CARD

the date or time independently of each other. The best part is having all your files correctly time/date-stamped when written. There won't be any more confusion over which file was written last.

The eSTe Clock Cartridge has two built-in EPROM sockets, so you can insert and run your own pre-programmed EPROM chips. (Otto Baade, who runs BigFoot Systems, says he can also supply blank, pre-etched, drilled, and socketed ST cartridge boards which accept and utilize up to four 2732, 2764, or 27128 EPROMS. Price for these boards runs \$15 each in quantities up to 999.)

I like anything that works without me needing to read the directions. The eSTe Clock fills the bill and keeps good time too. When we used it with Flash!—which demands use of the clock while running—the correct time was automatically reset when we returned to the desktop. My only wish-list feature would be a cartridge slot built into the eSTe, so that I could use other cartridges without losing my eSTe Clock.

Sorry, but I somehow feel compelled to write this: It's my personal opinion that the eSTe is the best ST plug-in clock yet.

ACTION PAK

Action Software
69 Clementina Street
San Francisco, CA 94105
(415) 974-6638
\$39.95

CIRCLE 256 ON READER SERVICE CARD

Reviewed by Sol Guber

Action Pak consists of four utility programs that make labels for 3 1/2-inch disks, print banners, emulate a typewriter and convert SynFile+ data for the ST.

The menu-driven disk labeler lets you print the directory of the disk in drive A, B or C, using normal, italic or bold print and sorting the files alphabetically. You can rename the disk, change the border around the label, or just print the directory in 80-column format. Included with the

package are 50 disk labels to get you started.

The banner program lets you print banners of up to four lines with as many as 72 characters each or send them to a disk file. For one-line banners the characters are about 64 asterisks high. On four-line banners, the size decreases to 16 asterisks. The disk contains four different fonts. The provided letters are slightly chunky and unattractive. But more fonts can be generated from Batteries Included's DEGAS or loaded from other sources.

The typewriter desktop accessory sends information directly to your printer. Just load the program and start typing. When you press [RETURN], that line is sent to the printer as shown, along with a line feed. You can delete characters before they are printed. This program can be used to

Make labels or banners, emulate a typewriter and convert SynFile+ data

address envelopes, fill out forms or write memos from within a program. It can also be used to send special characters to a printer to modify the printing.

The SynFile+ converter lets you make ST conversions of files generated on Atari 8-bit computers with Broderbund's SynFile+ database. The six programs supported are Hippo-Simple, Zoomracks, dBMAN, H&D Base, dbOne and dbMaster. To use the program, either connect your ST to an 8-bit machine via null modem cable, or upload and download the files to and from a bulletin board.

The SynFile converter is easy to use and has many prompts to help you. As it runs it gives information about the file and the record count, and displays a running total of the records processed. Once the records have been converted to ST format, some

massaging of the data may be needed to have them work properly.

All four programs are easy to learn, not copy-protected and have good documentation.

EZ-TRACK ST

Hybrid Arts
11920 W. Olympic Blvd.
Los Angeles, CA 90064
(213) 826-3777
\$65

CIRCLE 251 ON READER SERVICE CARD

Reviewed by Chris Many

During the past three or four years, programs called sequencers have been the bridge between computers and synthesizers. These programs emulate computerized player-pianos, but can control a whole orchestra of synthesized sounds. **EZ Track ST** is a simple but sophisticated home-market sequencer from Hybrid Arts, who manufacture the 8-bit MIDImate system reviewed in *Antic*, June 1985.

It should be noted immediately that EZ Track does not access the Atari's internal sound chips at all. Playing music requires an external MIDI synthesizer, such as the Casio CZ-101 (approximately \$300) or one of Yamaha's inexpensive new models. MIDI (Musical Instrument Digital Interface) is basically an electronics standard, such as serial and parallel computer interface standards. MIDI lets two or more synthesizers and computers "talk" to each other, translating musical notation into bits and bytes.

EZ Track is easy to use. Just connect your synthesizer to the MIDI In and MIDI Out ports on the back of the ST, click the start button, play a few notes and click the store button—you've recorded your first bit of music. Move to another track and add a bass line, click, click. Add a lead line on a third track, click, click. Three-part harmony in minutes. It's that easy.

To correct mistakes, just redo the tracks until you're satisfied. EZ Track's forward, record and pause controls and time counter all function identically to those on your home cassette

continued on next page

recorder. In fact, the whole program operates much like a multi-track tape recorder—except that it records musical information *digitally*.

With 20 recording tracks available, the possibilities seem almost endless. You can record up to 28,000 notes on a 520ST, and an amazing 63,000 on a 1040ST. Included in this program are several advanced features usually found only on high-end professional sequencers. A technique called quantizing lets you automatically smooth the timing of awkwardly-played notes, correct to the nearest 32nd-note.

For example, if you are playing a pattern of eighth notes and you want each note to fall precisely on the beat, it's easy to correct any minor fingering errors. You can copy music from one track to another and even combine tracks with no loss of musical clarity.

Tempo adjustment also helps makes recording easier. Playing *The Flight of the Bumblebee* at full speed is no mean feat, so just slow down the

tempo to where it's comfortable for you. When you speed up the playback, you'll sound like a virtuoso.

You can also assign any track a MIDI channel—up to 16 are available. For example, if you have a synthesizer playing an electric piano sound, then everything that comes out of EZ Track

two distinct sounds.

Yes, it gets expensive this way, so some companies make synthesizers that can play more than one sound at the same time. Casio's CZ-101 is probably the most affordable example.

All functions are readily accessible through the mouse or the ST keyboard. Normal disk access and file manipulation are available from within the program.

My only disappointment with EZ Track is the lack of cut-and-paste. Most simple 8-bit home music programs include this feature, which makes composition much easier. However, according to Hybrid Arts, this and many other features will be included on the upcoming MIDITrack ST and MIDITrack ST Professional.

Right now, EZ Track ST is the best sequencer available for the ST—an excellent, simple program. It brings a number of advanced features to the amateur musician and bridges the gap between high-tech music and an affordable, well-presented home program.

A

Operates like a multi-track tape recorder— but it records digitally

will sound like an electric piano. But if you tune one track to MIDI channel 1, (electric piano) and tune another track (bass) to channel 2, then tune one synthesizer (electric piano) to channel 1 and your *second* synthesizer (bass) to channel 2, you'll get

**An Ad In Antic
Reaches
More Than
100,000
Serious
Atari Users.**

Classifieds

STARTING IN MARCH

Antic Classifieds

Classified Manager, Antic—The Atari Resource
524 Second Street, San Francisco, CA 94107
Telephone (415) 957-0886

Name _____ Company _____

Address _____ Phone _____

City/State/Zip _____

MasterCharge/Visa Number _____ Expiration Date _____

Signature _____ Issue(s) Ad To Appear _____

Enclosed is my payment for \$ _____

NON-COMMERCIAL RATE: \$15.00 per line—three (3) line minimum.

COMMERCIAL RATE: \$25.00 per line—four (4) line minimum.

BOLDFACE: Add \$7.50 per line for boldface words or add \$40.00 for the entire ad set in boldface (any number of lines).

TERMS: Prepayment is required. Check, Money Order, Visa or MasterCard is accepted. Make check payable to Antic Publishing.

FORMS: Ads are subject to publisher's approval and **must be TYPED**. One line equals 40 letters and spaces between words. Please underline words to be set in boldface.

GENERAL INFORMATION: Advertisers using Post Office Box numbers in their ads must supply permanent address and telephone numbers. Ad will appear in the next available issue after receipt.

DEADLINE: 90 days prior to cover date (e.g., April 1987 closes January 1, 1987—April issue on sale March 1, 1987).

Clip this coupon, attach to typewritten copy and send with remittance to address above.

HANDWRITTEN COPY WILL NOT BE ACCEPTED.

BY GREGG PEARLMAN, ANTIC JUNIOR EDITOR

LATE NEWS FLASHES

Cartridge-based **Fast BASIC** is quick, powerful and easy to use, yet requires surprisingly little memory. The **Antic** technical staff is thoroughly impressed by our beta version. The language features *keyword* support of BIOS and XBIOS calls and makes good use of the GEM interface.

Computer Concepts, Gaddesden Place, Hemel Hempstead, Herts HP2 6EX, England. (0442) 63933. **BETA**.

CIRCLE 281 ON READER SERVICE CARD

On the day we closed this issue, Atari began shipping the ST version of their classic 8-bit game **Star Raiders**. The software is described as a faithful expansion of the original Star Raiders that uses the full power of the ST.

\$34.95 Atari Corp., 1196 Borregas Avenue, Sunnyvale, CA 94086. (408) 745-2000. **FINAL**.

CIRCLE 282 ON READER SERVICE CARD

MIDI

Midiplay stores more than 200,000 MIDI notes/events—approximately three hours of music—in 1MB of RAM. A real-time record/playback system, **Midiplay** supports all 16 channels of MIDI information including velocity, key and channel aftertouch, pitch bend, program changes and all 128 MIDI controllers such as pedals. With **Midiplay** you can record and play back your own music from any MIDI keyboard or synthesizer, change the musical key, tempo and timbre of the playback independently, even retrieve music files from disks to create medleys.

\$49.95. Electronic Music Publishing House Inc., 2210 Wilshire Blvd., Santa Monica, CA 90403. (213) 455-2025. **FINAL**.

CIRCLE 271 ON READER SERVICE CARD

SYS/EX is a universal and generic MIDI librarian that lets musicians store songs to disk. It works with about 60 different synthesizers, samplers, drum machines and other MIDI instruments. Files from different MIDI instruments can be appended from simultaneous uploading. MIDI dump files can be constructed from within the software.

\$150. Key Clique, 3960 Laurel Canyon Blvd. Suite 374, Studio City, CA 91604. (818) 905-9136. **FINAL**.

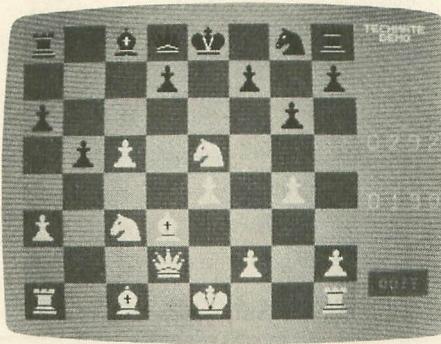
CIRCLE 272 ON READER SERVICE CARD

MEGABYTE UPGRADE

EZRAM 520, a 512K memory upgrade kit, increases the RAM of the 520ST to 1Mb, improves the ST's capacity to process memory-intensive applications such as spreadsheets and databases and makes disk access more efficient through larger RAM-disk space. **EZRAM 520** comes with a memory-check diagnostic program, three additional accessory programs and an entertainment program. Soldering is required.

\$199. **Terrific Peripherals**, 17 St. Mary's Court, Brookline, MA 02146. (617) 232-2317. **PRESS**.

CIRCLE 277 ON READER SERVICE CARD



ST CHESS

TechMate Chess from Szabo Software is completely mouse-driven and boasts a powerful new algorithm for speedy, competitive play. Crisp RGB color graphics are featured, the program does not work on monochrome monitor. Each side has an adjustable tournament clock. The software plays under complete official F.I.D.E. chess rules.

\$49.95. Szabo Software, P.O. Box 623, Borrego Springs, CA 92004. **FINAL**.

CIRCLE 270 ON READER SERVICE CARD

K-RESOURCE EDITOR

Kuma Software announces **K-Resource**, a complete resource editor for creating and updating AES icon resource files. The program operates fully through GEM and is a powerful tool for customizing the GEM interface for new applications programs in either monochrome or color. It features an Icon/Image Editor with auto-snap and auto-size. **K-Resource** produces files for inclusion in C, Pascal, Modula 2 and Fortran 77.

\$39.95 in British pounds. Kuma Software, 12 Horseshoe Park, Pangbourne, Berks RG8 7JW, England. 07357 4335.

CIRCLE 283 ON READER SERVICE CARD

UNIX SHELL

MT C-Shell is a multitasking, multiuser operating system that runs TOS programs in a fully TOS-compatible file system. Included is the powerful UNIX C Shell and a full-featured set of UNIX commands. The software supports remote dumb terminals via modem and is compatible with Micro RTX TOS. Each user can run several tasks concurrently, both real-time and time-shared. The program supports existing compilers, linkers and editors.

\$129.95. Beckmeyer Development Tools, 592 Jean Street #304, Oakland, CA 94610. (415) 658-5318. **PRESS**.

CIRCLE 273 ON READER SERVICE CARD

Pecan Software Systems has introduced a enhanced implementation of Softech Mirosystems' **UCSD Pascal Power System**, a development environment with facilities for creating and running application programs on a variety of machines and operating systems including MS-DOS. A Modula-2 compiler is under development.

Pecan Software Systems Inc., 1410 39th Street, Brooklyn, NY 11218. (718) 851-3100. **FINAL**. **PRESS**.

CIRCLE 274 ON READER SERVICE CARD

FAST/BASIC GEM

Version 1.35 of **Philon Fast/BASIC-M** now fully supports the GEM VDI graphics interface. Graphics output is produced by using PEEKS and POKEs into VDI.

\$129. **Philon Inc.**, 641 Avenue of the Americas, New York, NY 10011. (212) 807-0303. **PRESS**.

CIRCLE 276 ON READER SERVICE CARD

New ST product notices are compiled from information provided by the products' manufacturers. Antic assumes no responsibility for the accuracy of these notices or the performance of the product. Each mention is followed by a code word indicating that, at press time, Antic had seen a FINAL marketable version, near-final BETA, earlier ALPHA, incomplete DEMO, or PRESS release.

A

TEVEX = Software, Service, & Savings

SSI

	LIST PRICE	OUR PRICE
Battalion Commander	\$40	\$27
Battle/Antietam	\$50	\$33
Battle for Normandy	\$40	\$27
Breakthrough/Ardennes	\$60	\$40
Broadsides	\$40	\$27
Carrier Force	\$60	\$40
Colonial Conquest	\$40	\$27
Combat Leader	\$40	\$27
Computer Ambush	\$60	\$40
Computer Baseball	\$40	\$27
Computer Quarterback	\$40	\$27
Cosmic Balance	\$40	\$27
Field of Fire	\$40	\$27
50 Mission Crush	\$40	\$27
Gemstone Warrior	\$35	\$23
Gettysburg	NEW	\$60
Imperium Galactum	\$40	\$27
Kampfgruppe	\$60	\$40
Kamp. Scen. Disk	\$20	\$15
Knights of the Desert	\$40	\$27
Mech Brigade	\$60	\$40
Nam	\$40	\$27
Operation Market Garden	\$50	\$33
Panzer Grenadier	NEW	\$40
Phantasie	\$40	\$27
Questron	\$50	\$33
Rails West	\$40	\$27
Reforger 88	\$60	\$40
Six Gun Shootout	\$40	\$27
U.S.A.F.	\$60	\$40
War in Russia	\$80	\$53
Wizard's Crown	NEW	\$40
		\$27

BRØDERBUND

	LIST PRICE	OUR PRICE
Brimstone (2 drives)	\$40	\$27
Champ, Lode Runner	\$35	\$23
Essex (2 drives)	\$40	\$27
Lode Runner	\$35	\$23
Lode Runner's Rescue	\$30	\$20
Mindwheel (2 drives)	\$40	\$27
Print Shop	\$45	\$30
Print Shop Companion	\$35	\$23
PS Grap. Lib. 1,2,3	\$25	\$17

EPYX

	LIST PRICE	OUR PRICE
Ballblazer	\$40	\$27
Eidolon	\$40	\$27
Koronis Rift	\$40	\$27
Rescue on Fractalus	\$40	\$27
Summer Games	\$40	\$27
Temple Apshai Trilogy	\$40	\$27
World Karate Champ.	\$30	\$20

MICROPROSE

	LIST PRICE	OUR PRICE
Conflict in Vietnam	\$40	\$27
Crusade in Europe	\$40	\$27
Decision in the Desert	\$40	\$27
F-15	\$35	\$23
Kennedy Approach	\$35	\$23
Silent Service	\$35	\$23
Solo Flight	\$35	\$23
Top Gunner	NEW	\$25
		\$17

ATARI ST

	LIST PRICE	OUR PRICE
A Mind/Voyaging	\$45	\$30
Amazon	\$50	\$33
Ballyhoo	\$40	\$27
Black Cauldron	\$40	\$27
Borrowed Time	\$50	\$33
Bratoccus	\$50	\$33
Crimson Crown	\$20	\$15
Degas	\$40	\$27
Enchanter	\$40	\$27
Fahrenheit 451	\$50	\$33
Hacker	\$45	\$30
Hacker II	NEW	\$50
Hitchhiker's Guide	\$40	\$27
Kings Quest II	\$50	\$33
Leader Board	NEW	\$45
Little Computer People	\$50	\$33
Mean 18	NEW	\$45
Mindshadow	\$50	\$33
Music Studio	\$60	\$40
Nine Princes of Amber	\$50	\$33
Pawn	\$45	\$30
Phantasie	NEW	\$40
Rogue	\$40	\$27
Silent Service	NEW	\$40
Star Fleet I	NEW	\$55
Sundog	\$40	\$27
Sword of Kadash	\$20	\$15
Temple Trilogy	\$40	\$27
Transylvania	\$20	\$15
Treasure Island	\$40	\$27
Ultima II	\$60	\$40
Universe II	\$70	\$46
Winter Games	NEW	\$40
		\$27

ACTIVISION

	LIST PRICE	OUR PRICE
Ghostbusters	\$30	\$20
Great American CC Race	\$25	\$17
Hacker	\$25	\$17
Mindshadow (64k)	\$25	\$17
Music Studio	\$35	\$23
Space Shuttle	\$25	\$17
Star Bowl Football	\$25	\$17
Star League Baseball	\$25	\$17

INFOCOM

	LIST PRICE	OUR PRICE
Ballyhoo	\$40	\$27
Cutthroats	\$35	\$23
Deadline	\$45	\$30
Enchanter	\$35	\$23
Foobitzky	NEW	\$40
Hitchhikers Guide	\$35	\$23
Infidel	\$40	\$27
Planetfall	\$35	\$23
Sorcerer	\$40	\$27
Spellbreaker	\$45	\$30
Suspect	\$40	\$27
Wishbringer	\$35	\$23
Zork I	\$35	\$23
Zork II or III	\$40	\$27
4-in-one-Sampler	\$8	\$6
Invisclues	\$8	\$6

ELEC. ARTS

	LIST PRICE	OUR PRICE
Archon	\$15	\$12
Archon II: Adept	\$33	\$22
Chessmaster 2000	NEW	\$40
Movie Maker	\$33	\$22
M.U.L.E.	\$15	\$12
One on One	\$15	\$12
Racing Destr. Set	\$15	\$12
Super Boulder Dash	\$15	\$12
Touchdown Football	\$15	\$12
Ultima III-Origin Sys.	\$50	\$33
Ultima IV-Origin Sys.	\$60	\$40

ETC.

	LIST PRICE	OUR PRICE
Alternate Reality	\$40	\$27
Beachhead	\$35	\$23
Chickamauga	\$35	\$23
Clash of Wills	\$40	\$30
Fight Night	NEW	\$30
Flight Simulator II	\$50	\$33
Great War - 1914	NEW	\$40
Halley Project	\$30	\$20
Hardball	NEW	\$30
Leader Board	NEW	\$30
Metz/Cobra	\$40	\$30
Micro League Baseball	\$40	\$27
Napoleon at Waterloo	\$35	\$25
Never Ending Story	\$30	\$20
Raid Over Moscow	\$35	\$23
Sargon III	\$50	\$33
Star Fleet I	\$50	\$33
Universe	\$90	\$70

Tevex Blank Disks

Box of 10, 5 1/4" DSDD only \$12

TEVEX

INCORPORATED

1710 Wilwat Drive, Suite E
Norcross, GA. 30093
404-441-3045

BEST SELECTION - We have carefully selected the best titles

from the most challenging software available.

CALL TOLL-FREE - Call us to place an order or just to ask a question. Every call is always welcome on our 800 line.

SAME DAY SHIPPING - We ship every order the same day it's placed. Just call before 3:30 pm and we'll ship your order UPS.

DISCOUNT PRICES - Save up to 1/3 off the retail price when you buy from Tevex. Why pay more for the same software?

FRIENDLY, KNOWLEDGEABLE STAFF - We are always available to answer your questions and keep you up to date on new & upcoming games.

CALL TOLL-FREE 1-800-554-1162

SAME DAY SHIPPING *

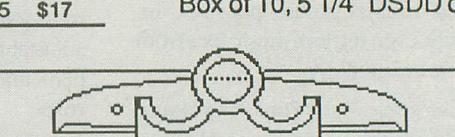
WRITE FOR FREE CATALOG



Open 9-8 Mon. - Fri. 10-4 Sat.

Georgia residents call 404-441-3045. ORDERING AND TERMS: C.O.D. orders welcome. When ordering by phone use VISA or MASTERCARD. When ordering by mail send personal check or money order. Include phone number. SHIPPING: Add \$2.50 for shipping and handling charge. Georgia residents add 4% sales tax. Shipping for Canadian orders is \$4.00 or 5% of order. APO & FPO orders add \$3.00 or 5% of order. Shipping for all other foreign orders is \$10.00 or 15% of order. * On all orders before 3:30 pm. All prices subject to change.

CIRCLE 068 ON READER SERVICE CARD



COMING SOON

Battlegroup - SSI

Destroyer Escort -

Microprose

Guderian - Avalon Hill

Gunship - Microprose

Lords/Conquest - EOA

Ogre - Origin Sys.

Shiloh - SSI

Wargame Const. - SSI

Warship - SSI

FOR THE ST

Breach - Omnitrend

Flight Sim II - Sublogic

Ultima III - Origin Sys.

SOFTWARE LIBRARY

Antic type-in listing section includes every full-length program from this issue. Listings are easier to type and proofread, easy to remove and save in a binder if you wish.

► SCROLLING SCENERY FOOLS THE EYE	
LANDSCAPE ILLUSION	105
► EDUCATION: BONUS GAME	
SPELLBLAST	107
► NEW VIEWS FOR 3-D GRAPHICS	
RESPONSE SURFACE MAPPING	110
► STARTING OUT	
NEW OWNERS COLUMN: LESSON 8	112
► GAME OF THE MONTH	
UNCLE HENRY'S NUCLEAR WASTE DUMP	114
► MOVING REAL THINGS WITH YOUR ATARI	
STEPPER MOTOR ROBOT-CONTROLLER	116
► STEPPER MOTOR FOR ST	
BUILD GEM DIALOG BOXES	117
► ST BASIC GAME	
DEDUCTION!	123
TYPING SPECIAL ATARI CHARACTERS	102
HOW TO USE TYPO II (8-BIT)	103
ERROR FILE	103
HOW TO USE TYPO ST	104

DISK SUBSCRIBERS: Programs for 8-bit Atari computers can be used immediately. Just follow instructions in the accompanying magazine articles. ST Owners: See monthly disk's ST Help File for instructions on how to transfer programs to 3-1/2 inch disk.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher.

Antic program listings are typeset on the Star's SB-10 printer—from Star Micronics, Inc., 200 Park Avenue, New York, NY 10166.

TYPPING SPECIAL ATARI CHARACTERS

Antic printed program listings leave a small space between each Atari Special Character for easier reading. Immediately below you will see the way Antic prints all the standard Atari letters and numbers, in upper and lower case, in normal and inverse video.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

0123456789

The Atari Special Characters and the keys you must type in order to get them are shown in the two boxes below.

NORMAL VIDEO			
FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
█ CTRL ,	█ CTRL S		
█ CTRL A	█ CTRL T		
█ CTRL B	█ CTRL U		
█ CTRL C	█ CTRL V		
█ CTRL D	█ CTRL W		
█ CTRL E	█ CTRL X		
█ CTRL F	█ CTRL Y		
█ CTRL G	█ CTRL Z		
█ CTRL H	█ ESC ESC		
█ CTRL I	█ ESC CTRL -		
█ CTRL J	█ ESC CTRL =		
█ CTRL K	█ ESC CTRL *		
█ CTRL L	█ CTRL .		
█ CTRL M	█ CTRL ;		
█ CTRL N	█ CTRL =		
█ CTRL O	█ ESC SHIFT		
█ CTRL P	█ CLEAR		
█ CTRL Q	█ ESC DELETE		
█ CTRL R	█ ESC TAB		

INVERSE VIDEO	
FOR THIS	TYPE THIS
█ CTRL ,	█ CTRL X
█ CTRL A	█ CTRL Y
█ CTRL B	█ CTRL Z
█ CTRL C	█ ESC SHIFT CLEAR
█ CTRL D	█ ESC SHIFT INSERT
█ CTRL E	█ ESC CTRL TAB
█ CTRL F	█ ESC SHIFT TAB
█ CTRL G	█ CTRL .
█ CTRL H	█ CTRL ;
█ CTRL I	█ SHIFT
█ CTRL J	█ ESC CTRL 2
█ CTRL K	█ ESC CTRL DELETE
█ CTRL L	█ ESC CTRL INSERT
█ CTRL M	
█ CTRL N	
█ CTRL O	
█ CTRL P	
█ CTRL Q	
█ CTRL R	
█ CTRL S	
█ CTRL T	
█ CTRL U	
█ CTRL V	
█ CTRL W	

Whenever the CONTROL key (CTRL on the 400/800) or SHIFT key is used, *hold it down* while you press the next key. Whenever the ESC key is pressed, *release* it before you type the next key.

Turn on inverse video by pressing the Reverse Video Mode Key █. Turn it off by pressing it a second time. (On the 400/800, use the Atari Logo Key █ instead.)

Among the most common program typing mistakes are switching certain capital letters with their lower-case counterparts—you need to look especially carefully at P, X, O and 0 (zero).

Some of Atari Special Characters are not easy to tell apart from standard alpha-numeric characters. Usually the Special Characters will be boxed. Compare the two sets of characters below:

SPECIAL	
█	█ CTRL F
█	█ CTRL G
█	█ CTRL N
█	█ CTRL R
█	█ CTRL S

STANDARD	
█	█ /
█	█ SHIFT +
█	█ SHIFT -
█	█ -
█	█ +

HOW TO USE TYPO II (8-BIT)

TYPO II automatically proofreads Antic's type-in BASIC listings for 8-bit Atari computers. It finds the exact line where you made a program typing mistake.

Type in TYPO II and SAVE a copy to disk or cassette. Now type GOTO 32000. When you see the instruction on the screen, type in a single program line **without the two-letter TYPO II code** at the left of the line number. Press the [RETURN] key.

Your line will reappear at the bottom of the screen with a two-letter TYPO II code on the left. If this code is not exactly the same as the line code printed in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk [*] followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000.

To remove TYPO II from your program, type LIST "D:FILENAME",0,31999 [RETURN] (Cassette owners LIST "C:"). Type NEW, then ENTER "D:FILENAME" [RETURN] (Cassette—ENTER "C:"). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.

LISTING 1

Don't type the  TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
UM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLS
SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "E":POSITION 11,1:?"TYPO II"
EM 32050 TRAP 32040:POSITION 2,3:?"Type
in a program line"
HS 32060 POSITION 1,4:?" ":"INPUT #2:LINE
$ :IF LINE$="" THEN POSITION 2,4:LIST B
:GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL
E$(2,LEN):POSITION 2,4:LIST B:
:GOTO 32060
TH 32080 POSITION 2,10:?"CONT"
MF 32090 B=VAL:POSITION 1,3:?" ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
```

```
ET 32120 ? "E":POSITION 11,1:?"TYPO II"
" :POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3:LINE$:IF
LINE$="" THEN ? "LINE ";B;" DELETED":G
OTO 32050
UU 32150 FOR D=1 TO LEN:C=C+1:ANS=
ANS+ASC:NEXT D
WJ 32160 CODE=INT
JW 32170 CODE=ANS-
EH 32180 HCODE=INT
BH 32190 LCODE=CODE-+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:?" CHR$;CHR$
UG 32220 POSITION 2,13:?"If CODE does no
t match press [RETURN] and edit line a
bove.":GOTO 32050
```

ERROR FILE

WEFAX SOURCES

Radio Shack is discontinuing the XR2211 chip specified for the WEFAX Interface Board (September, 1986). The XR2211 is a generic chip that can be found at a number of large electronics suppliers and mail-order dealers.

FILE MASTER

Disk subscribers should load *File Master* (August, 1986) from DOS and copy it to another disk. It does not RUN properly from the monthly disk menu.

If you have the *File Master* lockup problem that occurs under some combinations of DOS's and disk drives, change the 100 in line 2625 to a 90.

MICRO JULIUS

For some dates, *Micro Julius* (June, 1986) puts in the wrong day of the week. To cure this, type in the following one-line fix:

```
WF 830 DIF=(DOW-D)/7:DIF=2*INT<7>*+1
```

HOW TO USE TYPO ST

TYPO ST is the automatic proofreading program for checking Antic's ST BASIC type-in listings. It finds any program line where you made a typing mistake.

Type in TYPO ST and SAVE a copy to disk before you RUN it. Now type RUN in the command window and press the [RETURN] key, or click on RUN from the RUN menu.

TYPO ST first asks for the name of the file to check. Type the desired filename and press [RETURN]. (TYPO ST will proofread itself if you type TYPOST.BAS as the filename.) Next, TYPO ST asks where you want the TYPO table printed. Type [S] [RETURN] for Screen, or [P] [RETURN] for Printer.

TYPO ST now reads your ST BASIC program and prints out a table of four-number codes—and the line number for each code. Compare your printed TYPO ST table with the Antic TYPO ST table published at the end of the program you are checking. If any of your four-number codes don't match the magazine's codes, you have made a typing mistake somewhere in that line. Carefully recheck your line against the published version.

Antic uses a word processor to format ST BASIC listings for publication, so we can indent lines and make the program structure more understandable. ST BASIC doesn't allow indentation and will strip off any spaces between the line number and the first BASIC instruction. Therefore, TYPO ST ignores space characters and does not care how far instructions are spaced apart.

TYPO ST cannot determine if two different characters have been switched within a line. For example, PRINT and PRNIT will look the same to TYPO ST. However, ST BASIC itself catches this error and points it out to you.

```
1000  ' TYPO/ST, (c) 1986 Antic Publishing, by Bill Marquardt
1010  DISK=1: OUTPUT=2: TRUE=(-1): FALSE=0: CHECKSUMMING=TRUE
1020  TV=FALSE: PRINTER=FALSE
1030  Print "File to Check": input FILENAMES: Print "Output on:"
1040  Print "(S)creen or ": Print "(P)rinter": input DEVICES
1050  if( DEVICES$="P" )or( DEVICES$="P" )then PRINTER=TRUE else TV=TRUE
1060  if TV then print "Checksum for file": print FILENAMES: print
1070  if PRINTER then 1print "Checksum for file": FILENAMES: 1print
1080  open "I", #DISK, FILENAMES
1090  while CHECKSUMMING
1100      LINENUMBER=0: CHECKSUM=0: 90sub GETALINE
1110      DECIMAL=CHECKSUM: 90sub DECTOHEX
1120      OUTPUT$=STR$( LINENUMBER )+" "+HIS+LOS
1130      if PRINTER then 1PRINT OUTPUT$ else PRINT OUTPUTS
1140  wend
1150  close DISK
1160  end
1170  GETALINE:
1180  BLINES="": on error goto 1150
1190  GOTALINE=FALSE
1200  while not GOTALINE
1210      line input#DISK, BLINES: if len( BLINES )>1 then GOTALINE=TRUE
1220  wend
1230  LINENUMBER=val( BLINES )
1240  for CHAR=1 to len( BLINES )
1250      OK=TRUE: CHARACTERS=mid$( BLINES, CHAR, 1 )
1260      if CHARACTERS="" then OK=False
1270      if OK then CHECKSUM=CHECKSUM+asc( CHARACTERS+chr$( 0 ) )
1280  next CHAR
1290  return
1300  DECTOHEX:
1310  DECIMAL=abs( DECIMAL )
1320  HI=int( DECIMAL/256 ): LO=( DECIMAL-( HI*256 ) )
1330  HH=int( HI/16 ): HL=( HI-( HH*16 ) )
1340  LH=int( LO/16 ): LL=( LO-( LH*16 ) )
1350  HIS=chr$( 48+HH-( 7*( HH>9 ) ) )+chr$( 48+HL-( 7*( HL>9 ) ) )
1360  LOS=chr$( 48+LH-( 7*( LH>9 ) ) )+chr$( 48+LL-( 7*( LL>9 ) ) )
1370  return
```

1000 :110B	1060 :13E7	1120 :0A48	1180 :089A	1240 :079B	1300 :0352	1360 :0C29
1010 :0EA2	1070 :140E	1130 :1000	1190 :04C6	1250 :0AEB	1310 :0667	1370 :036B
1020 :071B	1080 :0713	1140 :0274	1200 :0680	1260 :08BB	1320 :0B13	
1030 :12D2	1090 :0661	1150 :0408	1210 :11B9	1270 :0F36	1330 :07E3	
1040 :10E6	1100 :0BBD	1160 :01FF	1220 :0273	1280 :03A8	1340 :0804	
1050 :11A2	1110 :09F0	1170 :034C	1230 :0716	1290 :036C	1350 :0C0E	

scrolling scenery fools the eye

LANDSCAPE ILLUSION

Article on page 67

LISTING 1

Don't type the
TYPO II Codes!

LISTING 2

Don't type the
TYPO II Codes!

```

AT 10 REM GOIN' WEST, LISTING 2
XV 20 REM BY JOE BRZUSZEK
GL 30 REM <C> 1986, ANTIC PUBLISHING
WA 35 REM <CREATES LINES 210,1010,1030,11
00-1150,1270,1280 AND 1330-1350>
CQ 40 REM <LINES 10-220 MAY BE USED WITH
IS 45 REM CHANGE LINE 70 AS NECESSARY.>
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
QZ 70 FN$="D:GWLINES.LST":REM THIS IS THE
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
BASIC LOADER"
CD 90 ? , "BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
se Stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):C=1
BK 130 AR$="":READ AR$:
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
2,255
DG 150 LM=LM-1:POSITION 10,10:? "<Countdo
wn>...T-";INT(LM/10);">""
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "<TOO
MANY DATA LINES!>:? "CANNOT CREATE FIL
E!":END
CZ 180 IF C<LN+1 THEN ? :? "<TOO FEW DATA
LINES!>:? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$:
PP 210 POKE 766,1:? #1:AS,:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? "COMPLETED"
HI 1000 DATA 1224
TK 1010 DATA 0500490480320890610850830820
40065068082040034104173049002133207133
209173048002133206024105003
XI 1020 DATA 1332081440061652091050001332
09169000133203133204133205133065160008
17720610504041185006160029
QQ 1030 DATA 177206105040411860061600411
7720610504041187006169007160038162006
032092228096034041841155049
TN 1040 DATA 0480490480320890610850830820
40065068082040034104104133209104133208
104133207104133205169224133
PW 1050 DATA 20841690001332031681628021772
03145206200208249230204230207202208242
16200217720814520623020208208
PI 1060 DATA 08223020892302062082422302072
02208237096034041044065068082040067036
041044088042050053054041155
HF 1070 DATA 0490480510480320890610850830
82040065068082040034104104133207104133
206104133209104133208169021
VQ 1080 DATA 1330641620401600001772061452
08160040145208230208208002230209230208
208002230207202208231198064
LI 1090 DATA 2400131652080241050401332081
44216230209208212096034041044065068082
040067036041044089049041058
KP 1100 DATA 0670360610340341550490490480
48032068065084065032000054127127062028
0088000240240831031024024
PF 1110 DATA 0240030030030030030030030030031
07107107239175191243192189189189255251
251255060107107107107107107
QK 1120 DATA 1071071891891891891891891891
8917517517517517170106085085255255255
187170170085107235235235171
TL 1130 DATA 1711711071891911911911911911901
91189191255255255255255173085175239187
2381550490490490490480320868065
JL 1140 DATA 0840650321701702380851751751
75175175175175175085109175175175175175
175085085085085091107107
UU 1150 DATA 0850850850850851811891890910
99175136170098090085245053253205253047
171105090088107091111717170

```

SPELLBLAST

Article on page 59

LISTING 1

Don't type the
TYPO II Codes!

```

YU 2 REM SPELL BLASTER
TR 3 REM BY MATTHEW RATCLIFF
FS 4 REM CC 1986, ANTIC PUBLISHING
AT 10 GRAPHICS 23:DIM A$(410),B$(45):AD=A
DR (A$):BD=ADR(B$)
ON 19 C0=0:C1=1:C2=2:C3=3:C4=4:C5=5:C6=6:
C8=8:C9=9:C10=10:C15=15:C50=50:C255=25
5:CGET=7:C127=127:C256=256
WN 100 DIM C$(354):CD=ADR(C$)
BS 110 GOSUB 5000:GOSUB 6000
CM 170 REM TEXT
ZH 180 C0=0:RESTORE 190:FOR I=C0 TO 21:RE
AD X:POKE 1536+I,X:NEXT I:GOTO 1000
ON 190 DATA 169,0,133,212,162,8,70,186,14
4,3,24,101,187,106,102,212,202,208,243
,133,213,96
GO 200 B=C0:FOR I=C1 TO C4
MP 210 A=INT(26*RND(C0))+C1:IF A=B THEN 2
10
KB 220 B=A:CR(I)=ALPH(A):NEXT I
XK 230 A=INT(LW*RND(C0))+C1:B=INT(C4*RND(C
0))+C1:C=ASC(WORD$(A,A))
IE 240 FOR I=C1 TO C4:IF CR(I)=C THEN 260
NR 250 NEXT I:CR(B)=C
QO 260 IF CR(C2)<>77 AND CR(C2)<>87 THEN
GOTO 290
HR 270 A=CR(C1):IF A<>77 AND A<>87 THEN C
R(C1)=CR(C2):CR(C2)=A:GOTO 290
XR 280 A=CR(C3):IF A<>77 AND A<>87 THEN C
R(C3)=CR(C2):CR(C2)=A
ZQ 290 RETURN
HL 300 PASS=C0:POKE KEY,C255:DED=C0:COLOR
C2:PLOT C50,44:PLOT 56,C50:PLOT C50,5
6:PLOT 44,C50:COLOR C1
XJ 310 SPELL=C0:SEL=C0:DISP=35:FOR Y=45 T
O 55:PLOT 45,Y:DRAWTO 55,Y:NEXT Y
CS 320 A=USR(CD,CR(C1),C1,47,44-DISP)
YH 330 A=USR(CD,CR(C2),C2,C50+DISP,48)
BQ 340 A=USR(CD,CR(C3),C3,46,52+DISP)
RU 350 A=USR(CD,CR(C4),C2,42-DISP,46)
UT 360 IF PEEK(KEY)<>C255 THEN SPELL=C1:G
ET #C1,K:RETURN
IG 370 IF NOT PEEK(TRG0) THEN PASS=C1:RE
TURN
DZ 380 A=PEEK(STK0):SEL=(A=14)+C2*(A=7)+C
3*(A=13)+4*(A=11)
IV 390 IF SEL THEN RETURN
ZI 400 POKE 50,DISP*C2+40
XB 410 DISP=DISP-C1:IF DISP>C5 THEN 320
CG 420 FOR W=C15 TO C0 STEP -0.15
EX 430 SOUND C0,PEEK(RD),C8,W:SETCOLOR C4
,W,C10
LM 440 NEXT W
CX 450 SETCOLOR C4,C0,C0:DED=C1:RETURN
NN 460 X=C8*(C10-LW):A=USR(CAD,ADR(BLANK$),
,C,LW,C0,X):RETURN
PZ 480 COLOR C2:PLOT 97,C10:DRAWTO 97,95
OF 510 A=USR(CAD,ADR(SCR)),C6,C3,C15,112
VR 520 A=USR(CAD,ADR(GES)),C5,C3,45,112
LB 530 A=USR(CAD,ADR(OK)),C10,C2,65,128
UU 540 B$=STR$(GUES):A=USR(CAD,BD,C5,LEN(B
$),55,128)
FR 550 B$=STR$(OK):A=USR(CAD,BD,C10,LEN(B$),
,75,128)
KA 560 B$=STR$(SCR):I=C1:Y=30:B$ (LEN(B$)+
C1)=" "
BY 570 FOR X=112 TO 112+C8*(LEN(B$)-C1) S
TEP C8
TO 580 A=USR(CD,ASC(B$(I,I)),C3,X,Y)

```

```

YB 590 I=I+C1:NEXT X
AI 595 RETURN
AX 600 FOR I=7 TO 87 STEP C8
BV 610 A=USR(CAD,ADR(" ",C0,C6,I))
GA 620 NEXT I
ZI 630 RETURN
AP 640 A=USR(CAD,ADR(" ",C0,C6,87,C0))
ZM 650 RETURN
HX 1000 TRG0=644:STK0=632:KEY=764:RD=5377
0:TGES=C0:GUES=C0:SCR=C0:H5CR=C0:BLNK=
ASC(" ")
BL 1010 DIM CR(C4),ALPH(26),WORD$(C10),BL
ANK$(C10):FOR I=C1 TO 26:ALPH(I)=I+64:
NEXT I
PY 1020 RESTORE 20000:READ LINES:50=53760
:OK=C0:TOK=C0:BGR=100
JP 1030 OPEN #C1,C4,C0,"K:"
OE 1040 GRAPHICS 23:SETCOLOR C0,C10,C10:5
ETCOLOR C1,12,C8:SETCOLOR C2,C4,C10
RU 1050 B$="SPELLblast":SOUND C0,C0,C8,C1
0:GOSUB 6000
SD 1060 FOR Y=C0 TO 80:A=USR(CAD,CD,C5,LEN
(B$),Y,C0):POKE 50,Y*2:NEXT Y
RD 1070 FOR Y=80 TO 20 STEP -C1:A=USR(CAD,
CD,C15,LEN(B$),Y,C0)
KU 1080 SOUND C0,Y,C10,C10:SOUND C1,Y+C4,
C10,C10
MK 1090 NEXT Y
GH 1100 POKE KEY,C255
YE 1110 A=USR(CAD,ADR("FROM ANTIC"),C10,C1
0,C50,C0)
IK 1120 A=USR(CAD,ADR("PRESS"),C15,C5,70,4
0)
OE 1130 A=USR(CAD,ADR("BUTTON"),C5,C6,80,4
0)
BR 1140 SOUND C0,60,C10,C5:SOUND C1,64,C1
0,C5
BU 1150 FOR I=C5 TO C15 STEP C5:C=PEEK(RD
)/2:POKE KEY,C255
QG 1160 A=USR(CAD,CD,I,LEN(B$),20,C0)
SO 1170 POKE 50,C:POKE 50+C2,C5*I
ZI 1180 IF (PEEK(KEY)<>C255 OR PEEK(TRG0)
=C0) THEN 1200
NU 1190 NEXT I:GOTO 1150
DC 1200 SOUND C0,C0,C0,C0:SETCOLOR C2,C15,C0:POKE
752,C1:GOSUB 6000
FT 1210 ? :? :GOSUB 1400
TY 1220 B$=" USE JOYSTICK TO PLAY":? :
GOSUB 1400
FU 1230 B$="POINT HANDLE IN DIRECTION":? :
GOSUB 1400
VO 1240 B$="OF LETTER THAT YOU THINK":GOS
UB 1400
UU 1250 B$="WILL FIT IN THE WORD AT TOP":?
GOSUB 1400
UK 1260 B$="PRESS FIRE BUTTON TO PASS":? :
GOSUB 1400
SJ 1270 B$="IF LETTERS WON'T FIT OR":GOSU
B 1400
ED 1280 B$="ARE ALREADY CHOSEN":GOSUB 140
0
WN 1290 B$="TO TRY SPELLING THE WORD, PRE
SS":? :GOSUB 1400
TU 1300 B$="SPACE BAR (FOR MORE POINTS)":?
GOSUB 1400
ND 1310 B$="PRESS [Q] KEY TO QUIT THE GAM
E":? :GOSUB 1400
DZ 1320 B$="AND SEE TOTALS":GOSUB 1400
NC 1330 B$="PRESS [BUTTON] TO START":? :?

```

continued on next page

```

:GOSUB 1400
GX 1340 POKE KEY,C255
BW 1350 IF NOT <PEEK(KEY)>>C255 OR PEEK<
TRG0>=C0> THEN 1350
RP 1360 GOTO 2800
PV 1400 A=38-LEN(B$):L=INT(A/C2)
YG 1410 FOR I=C1 TO L:?" ";:NEXT I
DD 1420 ? B$
AQ 1430 RETURN
GN 1500 TGES=TGES+GUES:GUES=C0:TOK=TOK+OK
:OK=C0:TW=TW-C1:IF TW=C0 THEN GOTO 230
0
NU 1510 LINE=INT(LINES*RND(C0))+BEGLIN:RE
STORE LINE:BLANKS=WORDS
BP 1520 A=INT(C5*RND(C0))+C1
ZB 1530 FOR I=C1 TO A:READ WORDS:NEXT I:L
W=LEN(WORDS)
BJ 1540 IF BLANKS=WORDS THEN 1510
DD 1550 BLANKS="-----"
OH 1560 GRAPHICS 23:SETCOLOR C0,C4,C10:SE
TCOLOR C1,9,C10:SETCOLOR C2,12,C10:POK
E 77,C0
AE 1570 C=C10:GOSUB 6000:GOSUB 460
XV 1580 GOSUB 500
WO 1590 GOSUB 200
GQ 1600 SOUND C0,C0,C8,C8:GOSUB 300
RH 1610 IF PASS THEN GOSUB 600:GOTO 1570
GJ 1620 IF NOT DED THEN 1750
ZC 1630 GRAPHICS 23:SETCOLOR C1,C4,C10
ML 1640 SETCOLOR C2,9,C10:SETCOLOR C3,12,
C10:GOSUB 6000
UR 1650 BLANKS=WORDS:C=C5:GOSUB 460
AB 1660 C=C10*LW:SCR=SCR-C
BN 1670 A=USR(AD,ADR<"LOSE">),C10,C4,40,48
>
SW 1680 B$=STRS(C):A=USR(AD,BD,C5,LEN(B$),
,60,C8*

```

```

IX 1990 SOUND C0,PEEK(RD),C6,W
YU 2000 A=USR(AD,ADR<"*WRONG*">),W,7,20,16
>
KR 2010 NEXT W
SD 2020 GOTO 1560
JO 2030 IF NOT SEL THEN 3000
RK 2040 ON SEL GOTO 2050,2060,2070,2080
MO 2050 COLOR C3: PLOT C50,45:DRAWTO C50,5
1-DISP:GOTO 2090
AH 2060 COLOR C1: PLOT 55,C50:DRAWTO 51+DI
SP,C50:GOTO 2090
KD 2070 COLOR C2: PLOT C50,55:DRAWTO C50,5
1+DISP:GOTO 2090
LS 2080 COLOR C1: PLOT 45,C50:DRAWTO 49-DI
SP,C50
DI 2090 FOR W=C15 TO C0 STEP -C3
XZ 2100 A=INT(PEEK(RD)/1.25):SOUND C0,A,1
2,W:SOUND C1,A+C8,C8,W
KT 2110 NEXT W
BB 2120 B$=CHR$(CR<SEL>):C=C0:GUES=GUES+C
1
RP 2130 FOR I=C1 TO LW
LB 2140 IF B$=BLANKS(I,I) THEN GOSUB 600:
GOTO 1570
W0 2150 IF B$>WORDS(I,I) THEN 2180
ZT 2160 BLANKS(I,I)=WORDS(I,I):SCR=SCR+C2
:C=C+C1:OK=OK+C1
KT 2165 FOR A=40 TO 30 STEP -C2:SOUND C0,
A,C10,C10:SOUND C1,A+C4,C10,C10:NEXT A
YP 2167 SOUND C0,C0,C0,C0:SOUND C1,C0,C0,
C0:C=C10:GOSUB 460
KX 2170 IF BLANKS(C1,LW)=WORDS(C1,LW) THE
N 2210
FQ 2180 NEXT I
LM 2190 IF C=C0 THEN SCR=SCR-C2
BW 2200 GOSUB 600:GOTO 1570
HQ 2210 GRAPHICS 23:SETCOLOR C1,C10,C10:SE
TCOLOR C2,14,C10:GOSUB 6000
UG 2220 C=C5:GOSUB 460
HQ 2230 SCR=SCR+C10:GOTO 1910
HP 2240 GRAPHICS 23:SETCOLOR C0,C4,C10:SE
TCOLOR C1,12,C8:SETCOLOR C2,9,C10:POKE
KEY,C255:GOSUB 6000
EF 2250 TGES=TGES+GUES:TOK=TOK+OK
ZY 2260 A=USR(AD,ADR<"SPELLblast">),C5,C10
,C0,C0>:C=C1:CC=C1
BL 2270 B$="Final Score":B$<LEN(B$)+C1>=
STRS(SCR):Y=C10:GOSUB 2700
PL 2280 B$="High Score":IF SCR>HSCR THEN
HSCR=SCR
RG 2290 B$<LEN(B$)+C1>=STRS(HSCR):Y=20:GO
SUB 2700
SH 2300 B$="Total Correct LTRS":Y=30:GOSU
B 2700
UG 2310 B$=STRS(TOK):Y=38:GOSUB 2700
CW 2320 B$="Total Guesses":Y=C50:GOSUB 27
00
JK 2330 B$=STRS(TGES):Y=58:GOSUB 2700:IF
TOK=C0 THEN TOK=C1
XD 2340 B$="AVG of ":AV=INT(TGES*C10/TOK
)>/C10
OZ 2350 IF AV<BGR THEN BGR=AV
LO 2360 B$<LEN(B$)+C1>=STRS(AV):B$<LEN(B$
)+C1>="GES/LTR"
EJ 2370 Y=70:GOSUB 2700
MD 2380 B$="Best AVG is":B$<LEN(B$)+C1>=
STRS(BGR):Y=80:GOSUB 2700
FE 2390 POKE 50,PEEK(RD)
XP 2400 IF NOT <PEEK(KEY)>>C255 OR PEEK<
TRG0>=C0> THEN 2320
EP 2410 SOUND C0,C0,C0,C0:GOTO 2800
ZZ 2420 CC=CC+C1:IF CC>C15 THEN CC=C1
CZ 2430 POKE 77,C0:A=USR(AD,ADR<"SPELLbla
st">),CC,C10,C0,C0>
PL 2440 L=LEN(B$):S=C8*

```

OW	10005	DATA COBRA, FOX, ZEBRA, MOCCASIN, SWAN
ED	10006	DATA MONKEY, CHIMPANZEE, GORILLA, MINK, CHINCHILLA
RQ	10007	DATA SKUNK, SQUIRREL, CHIPMUNK, WOODPECKER, LAMB
FA	10008	DATA BASS, SHARK, CATFISH, BLUEGILL, TUNA
IL	10009	DATA CHICKEN, ROOSTER, CARDINAL, BLUEJAY, SPARROW
JZ	10010	DATA THRUSH, QUAIL, YAK, PANDA, RACCOON
QB	10011	DATA BEAVER, OSTRICH, OTTER, RHINOCEROS, RABBIT
UR	10012	DATA DEER, MOOSE, WREN, DUCK, TURTLE
CI	10013	DATA COUGAR, SEAL, WALRUS, PYTHON, ELEPHANT
OB	10014	DATA PACHYDERM, JAGUAR, HYENA, KOALA, BAT
ET	10015	DATA KANGAROO, GRIZZLY, HAMSTER, BULLFROG, TOAD
IH	10016	DATA LIZARD, SALMON, TROUT, TUNA, MONGOOSE
NO	10017	DATA BUFFALO, BISON, CAMEL, STEER, WEASEL
HY	10020	DATA GUITAR, VIOLA, VIOLIN, UKELELE, PIANO
QO	10021	DATA FLUTE, SAXOPHONE, OBOE, TROMBONE, TRUMPET
OL	10022	DATA DRUM, BUGLE, TUBA, KETTLEDRUM, XYLOPHONE
EY	10023	DATA ZITHER, LYRE, HARP, LUTE, CLARINET
KO	10024	DATA PICCOLO, CELLO, ACCORDION, ALTHORN, BAGPIPE
CQ	10025	DATA BALALAIIKA, BANJO, CASTANETS, CLAVICHORD, CONCERTINA
PQ	10027	DATA MANDOLIN, MARIMBA, ORGAN, HARMONICA, WOODWIND
YU	10030	DATA BYTE, MODEM, BOOLEAN, PROGRAM, BASIC
QF	10031	DATA ANTIC, BINARY, LOGO, EQUATION, GRAPHICS
SC	10032	DATA ARRAY, DOS, INPUT, ROUTINE, MONITOR
LO	10033	DATA MOUSE, PARALLEL, PRINTER, SOFTWARE, ROM
PR	10034	DATA JOYSTICK, FORTRAN, FILE, BUFFER, ASCII
PI	10035	DATA BOOT, SERIAL, OPUS, XMODEM, SPRITE
QG	10036	DATA MEMORY, COMMAND, STACK, FORMAT, PARITY
KU	10037	DATA PARSER, ENIAC, REGISTER, INTERRUPT, LOOP
YM	19990	REM BEGINNING LINE & TOTAL LINES
KW	19991	REM FOR EACH TOPIC START IN DATA HERE
AQ	20000	DATA 10000, 18, 10028, 8, 10030, 8

LISTING 2

```

REM 10 REM SPELLBLASTER, LISTING 2
REM 20 REM BY MATTHEW RATCLIFF
REM 30 REM (C) 1986, ANTIC PUBLISHING
REM 35 REM <CREATES LINES 5000-5068>
REM 40 REM <LINES 10-220 MAY BE USED WITH
REM OTHER BASIC LOADERS IN THIS ISSUE.
REM 45 REM CHANGE LINE 70 AS NECESSARY.>
REM 50 DIM FN$(20), TEMP$(20), AR$(93)
REM 60 DPL=PEEK(10592):POKE 10592,255
REM 70 FN$="D:SLINE.LST":REM THIS IS THE NAME OF THE DISK FILE TO BE CREATED
REM 80 GRAPHICS 0:?"ANTIC'S GENERIC BASIC LOADER"
REM 90 ?, "BY CHARLES JACKSON"
REM 100 POKE 10592,DPL:TRAP 170
REM 110 ?:?:?:?"Creating ";FN$?:? "...please stand by."
REM 120 RESTORE :READ LN:LM=LN:LN:DIM AS<LN>:C=1
REM 130 AR$="":READ AR$  

REM 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
REM 2,255

```

continued on next page

```

DG 150 LM=LM-1:POSITION 10,10:?"Countdo
wn..T-";INT(LM/10);"
UY 160 A$(C,C)=CHR$(VAL(CAR$(X,X+2))):C=C+
1:NEXT X:GOTO 130
MZ 170 IF PEEK<195>=5 THEN ? :? :? "NTOO
MANY DATA LINES!":? "CANNOT CREATE FIL
E!":END
CZ 180 IF C<LN+1 THEN ? :? "NTOO FEW DATA
LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FNS
PP 210 POKE 766,1:?:#1:A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:?"COMPLETED"
"
MC 1000 DATA 956
CC 1010 DATA 0530480480480320650360400490
440560498410610341652001332231690001133
222165084133229165085133227
SH 1020 DATA 1650861332281660871690102240
05144088169020224007144002169040133239
104240048170104133213104133
OS 1030 DATA 2122022400491041041332232022
4004210410413322202240035104104133229
202240022104133228104133227
OL 1040 DATA 2022400190341550530480490480
32065036040056050044049054051041061034
10410420220825102414011169
QZ 1050 DATA 2530761642461690001332271332
28165229133233165239133236169000133230
162008010038230006233144007
YT 1060 DATA 0241012361440022302302022082
39133229165088133216165089133217165229
024101216133216165230101217
XL 1070 DATA 1332171620011650872010091760
07162034155053048050048032065036040049
054052044050052052041061034
SD 1080 DATA 0020741760021620031652271012
28240025070221022272022400805070227202
208251230233024165227101216
FR 1090 DATA 1332161440022302171652161332
24165217133225169000133226162000169000
149218232165223149218010010
BC 1100 DATA 01080102321492180052192321492
18164226177212162000134234201034155053
048051048032065036040050052
MI 1110 DATA 0530440510500540410610341281
44004041127198234170133236224096176013
169064224032144002169224024
UC 1120 DATA 1012361332361690001332331690
00133215162008010038215006233144007024
101236144002230215202208239
CR 1130 DATA 1332140241732440021012151332
15160000132235160008132238024144003024
144169164235177214034155053

```

```

CD 1140 DATA 0480520480320650360400510500
55044052049048041061034230235069234133
232169000133237169004133231
VK 1150 DATA 1690001332331600020062320382
33136208249166233181218164237145216230
237198231208229024165216101
KU 1160 DATA 2391332161440022302171982382
0819619822208001096230226024165224105
004133224144002230225133216
BI 1170 DATA 1652251332170241441660960341
55053048054048032067036040049044056050
041061034104240010201004240
OR 1180 DATA 0131701041042022082511690221
33185076064185104133195104201128144004
041127198195170141022006224
LQ 1190 DATA 0961760151690642240321440021
69224024109022006141022006104104141023
006104104141024006201004144
DZ 1200 DATA 0050562330041762471332142010
00240007169004034155053048054050032067
036040050501044049054052041
FZ 1210 DATA 0610340562292141332140780240
06078024006006214024104104141025006133
186166087169010224003240008
BA 1220 DATA 16900220240052400021690401332
07133187165088133203165089133204032000
006024173024006101203133203
YQ 1230 DATA 1440022302040241652031012121
33203165204101213133204173022006133187
034155053048054052032067036
TD 1240 DATA 0400490540530440500520540410
61034169008133186302000006165212133205
173244002101213133206160000
YA 1250 DATA 1620081690001332091332081772
05069195072104010072144008024173023006
005208133208224001240008006
EW 1260 DATA 2080382090062080382092022082
28104152072160008132215132212166214240
088056038215202208250177203
CY 1270 DATA 0341550530480540540320670360
40050052055044051050056041061034005215
069215145203165215073255133
ZZ 1280 DATA 2152002001772030052150692151
45203166214006209038212202208249160000
024177203101212145203169008
CK 1290 DATA 0562292141701322120702081022
122022082492400022081351600002024177203
101212145203024165208101209
NR 1300 DATA 1600011452030241440091652090
34155053048054056032067036040051050057
044051053052041061034145203
WG 1310 DATA 2001652081452031041680241652
03101207133203144002230204200192008208
206096034155

```

new views for 3-D graphics

RESPONSE SURFACE MAPPING

Article on page 47

LISTING 1

Don't type the  TYPE II Codes!

```

OS 1000 REM RSMAP
YS 1010 REM BY JIM PIERSON-PERRY
NR 1020 REM (c) 1986, ANTIC PUBLISHING
ZO 1025 REM DO NOT RENUMBER THIS PROGRAM
NM 1030 BREAK=1:IF PEEK<53279>=5 THEN BRE
AK=0
CB 1040 DEG :GOTO 1240
QQ 1050 Z=5QR<X^2+Y^2>
AR 1060 RETURN
DT 1080 REM COMPUTE FUNCTION, PLOT MAP
JU 1090 FOR J=C0 TO 40:Y=Y-SY:X=X1-SX:B$<
C1,C63>=BL$<C1,C63>:IF J/C5=INT<J/C5>
THEN B$<C1,C1>="*":B$<C63,C63>="*"
LD 1100 TRAP 2810:FOR I=C2 TO 62:X=X+SX

```

```

SB 1110 IF PEEK<CON>=OPTION THEN POP :POP
:GOTO 2410
ZJ 1120 GOSUB 1050
HF 1130 IF Z<Z1 THEN K=C1:GOTO 1160
XG 1140 IF Z>Z2 THEN K=51:GOTO 1160
DT 1150 K=INT<(Z-Z1)/S2>+C1
ZA 1160 TRAP CLEAR:B$<I,I>=C$<K,K>:NEXT I
FC 1165 POSITION C5,19:?" *** Plotti
ng *** ":"POKE 712,50
FG 1170 ? #C2:B$<C1,C63>;BL$<C1,C4>;C$<J+
C6,J+C6>:GOSUB 1210:POKE 712,160
TZ 1175 POSITION C5,19:?" --- Thinki
ng --- "

```

```

GA 1180 NEXT J
BC 1190 RETURN
LG 1200 REM DISABLE BREAK KEY
HN 1210 POKE 77,0:IF BREAK THEN POKE 16,1
12:POKE 53774,112
AJ 1220 RETURN
IT 1230 REM START OF MAIN PROGRAM
GG 1240 DIM B$(63),BL$(67),C$(51),F$(80),
C$51
XS 1250 GRAPHICS 0:CR1=PEEK(709):CR2=PEEK
(710):CR4=PEEK(712):POKE 709,172:POKE
710,160:POKE 712,160
JA 1255 POKE 559,( NOT <BREAK>)*34
XO 1260 GOSUB 1210:C0=0:C1=1:C2=2:C3=3:C4
=4:C5=5:C6=6:C10=10:C63=63:C67=67:CLEA
R=40000:CON=53279
YC 1270 OPTION=C3:SELECT=C5:START=C6:PI=3
.14159:E=2.71828179:BL$(C1)="":BL$(C6
7)="":BL$(C2)=BL$
BH 1280 C$="A,B,C,D,E,F,G,H,I,J,K,L,M,N,O
,P,Q,R,S,T,U,V,W,X,Y,Z"
EC 1290 POKE 752,C1
UO 1300 REM INTRO
CH 1310 ? "":POSITION C6,C4:?""
KY 1320 POSITION C6,C5:?""
P 1330 POSITION C6,C6:?" Response Surf
ace Mapping"
IF 1340 POSITION C6,7:?""
VI 1350 POSITION 11,12:?" Jim Pierson-Per
son"
DX 1355 POSITION 10,16:?" ALL RIGHTS RESE
RVED":POKE 559,34
NQ 1360 FOR I=C1 TO 700:NEXT I
AC 1620 REM ENTER FUNCTION
FW 1630 ? "":POSITION 9,C0:?" PLOT FUNC
TION INPUT"
PL 1640 POSITION C3,C2:?" Type in the Plo
tting function. Use valid BASIC synt
ax. The function can"
OU 1650 POSITION C0,C4:?" use up to 2 ind
ependent variables: X and/or Y."
ZC 1660 POSITION C3,7:?" Press BACKSPACE
To Erase Typos"
LI 1670 POSITION C3,9:?" Press RETURN Whe
n Finished"
UX 1680 POSITION C0,13:?" Z=":FOR I=C1 T
O 78:?" :"NEXT I
IW 1690 POKE 752,C0:POSITION C2,13:F$="":
F$(C1,C2)="Z":I=C3
PB 1700 CLOSE #C6:OPEN #C6,C4,C0,"K":GOS
UB 1210
FQ 1710 GET #C6,X:IF X=155 THEN CLOSE #C6
:GOTO 1780
UP 1720 IF X=126 AND I>3 THEN ? CHR$(X);"
-":CHR$(30);:I=I-C1:F$(I,I)="":GOTO 1
710
WU 1730 IF I=81 THEN 1710
XE 1740 IF <X>39 AND X<44> OR <X>44 AND X
<58> OR <X>64 AND X<91> OR X=94 THEN 1
760
RK 1750 GOTO 1710
QS 1760 F$(I,I)=CHR$(X):? CHR$(X);:I=I+C1
:GOTO 1710
KM 1770 REM INSTALL FUNCTION
UH 1780 POKE 559,( NOT <BREAK>)*34:POKE 7
52,C1:?"":? :? :"1050 ",F$?:
EH 1790 ? "CONT":POSITION C0,C0:POKE 842,
13:STOP
ED 1800 TRAP 2570:POKE 842,12:TRAP CLEAR
OP 1810 ? "":POSITION 8,C0:?" PLOT PARA
METER INPUT":POKE 559,34
DR 1820 REM GET PLOT AXES BOUNDARIES
WH 1830 POSITION C0,C2:?" ENTER VALUES FO
R":"
HD 1840 POSITION C3,C4:?" X-axis MINIMUM=
":INPUT X1
DK 1850 POSITION C10,C5:?" MAXIMUM= ":IN
PUT X2
MY 1860 IF X2<X1 THEN GOSUB 2660:POSITION
C0,C4:? BL$(C1,38):? BL$(C1,38):GOTO
1840
CX 1870 POSITION C3,7:?" Y-axis MINIMUM=
":INPUT Y1
SP 1880 POSITION C10,8:?" MAXIMUM= ":INP
UT Y2
VQ 1890 IF Y2<Y1 THEN GOSUB 2660:POSITION

```

```

C0,7:? BL$(C1,38):? BL$(C1,38):GOTO 1
870
LT 1900 REM ESTIMATE RESPONSE RANGE OVER
PLOT AXES
AH 1910 POSITION C0,10:?" PLEASE WAIT- ES
TIMATING RESPONSE RANGE"
EX 1920 SX=(X2-X1)/C10:SY=(Y2-Y1)/C10:TRA
P 2810
FM 1930 X=X1:Y=Y1
AF 1940 GOSUB 1050
PE 1950 ZL0=Z:ZHI=Z
AP 1960 FOR Y=Y1 TO Y2 STEP SY
YD 1970 FOR X=X1 TO X2 STEP SX
AR 1980 GOSUB 1050
ZU 1990 IF Z<ZL0 THEN ZL0=Z
LT 2000 IF Z>ZHI THEN ZHI=Z
LC 2010 NEXT X
LQ 2020 NEXT Y
UT 2030 TRAP CLEAR
BE 2040 POSITION C0,C10:?" BL$(C1,38):POSI
TION C0,C10:?" ESTIMATED RESPONSE (Z)
RANGE: "
FC 2050 POSITION C3,11:?" Z MINIMUM= ":ZL
0
YS 2060 POSITION C5,12:?" MAXIMUM= ":ZHI
FF 2070 POSITION C0,20:?" Press START T
o Use These Values"
AF 2080 POSITION C0,21:?" Press OPTION
To Enter Response Range"
OZ 2090 IF PEEK(CON)=START THEN Z1=ZL0:Z2
=ZHI:GOTO 2170
BT 2100 IF PEEK(CON)=OPTION THEN 2120
RS 2110 GOTO 2090
UJ 2120 FOR I=C10 TO 21:POSITION C0,I:?
L$(C1,39):NEXT I
RC 2130 POSITION 8,C10:?" Z MINIMUM= ":I
NPUT Z1
PW 2140 POSITION C10,11:?" MAXIMUM= ":IN
PUT Z2
QF 2150 IF Z2<Z1 THEN GOSUB 2660:POSITION
C0,C10:?" BL$(C1,38):? BL$(C1,38):GOTO
2130
UQ 2160 REM SET PRINTER - START MAPPING
NI 2170 ? "":POSITION C5,C0:?" RESPONSE
SURFACE MAP OUTPUT":POKE CON,7
WU 2180 POSITION 9,C2:?" Prepare your pri
nter: "
JL 2190 POSITION C10,C4:?" -Power on"
XC 2200 POSITION C10,C6:?" -Set paper at
top of page":GOSUB 1210
LR 2210 POSITION C5,20:?" Press START T
o continue.."
MB 2220 POSITION C5,21:?" Press OPTION
to abort.."
VH 2230 IF PEEK(CON)<>START THEN 2230
RM 2240 TRAP 2720:CLOSE #C2:OPEN #C2,C8,C
0,"P":TRAP CLEAR
XE 2250 POSITION C5,19:?" *** Plotting
*** "
HU 2251 POSITION C5,20:?" "
IF 2260 SX=(X2-X1)/60:SY=(Y2-Y1)/40:Z=Z
2-Z1)/50:C(C1)=Z1
IE 2270 FOR I=C2 TO 51:C(I)=C(I-C1)+Z:NE
XT I
NC 2280 TRAP 2720:?" C2:?" C2:I=40-LEN(F$)
/C2:?" C2:BL$(C1,I);F$??" C2:?" C2:TR
AP CLEAR
KE 2290 ? C2:?" C2:?" C2:BL$(C1,15);?" X-a
xis range= ":X1;" to ";X2
BT 2300 ? C2:BL$(C1,15);?" Y-axis range= "
;Y1;" to ";Y2
JM 2310 FOR I=C1 TO C4:?" C2:BL$(C1,C67);
C$(I,I);?":C(I):NEXT I
ZL 2320 B$(C1,C63)=BL$(C1,C63):FOR I=C2 T
O 62 STEP C5:B$(I,I)="":NEXT I
ZL 2330 ? C2:B$(C1,62):BL$(C1,C5):C$(C5,
C5);?":C(C5)
IP 2340 REM
RX 2350 Y=Y2+SY
EI 2360 REM CALL THE MAPPING SUBROUTINE
HC 2370 POSITION C5,19:?" --- Thinki
ng --- :" GOSUB 1090
AD 2380 B$(C1,C63)=BL$(C1,C63):FOR I=C2 T
O 62 STEP C5:B$(I,I)="":NEXT I
QJ 2390 ? C2:B$(C1,62):BL$(C1,C5):C$(C47,
C47);?":C(47)
UD 2400 FOR I=48 TO 51:?" C2:BL$(C1,C67);
C$(I,I);?":C(I):NEXT I
PR 2410 ? C2:CHR$(12):CLOSE #C2

```

continued on next page

```

VA 2420 REM MAP COMPLETE - ALLOW RERUNS
XC 2430 ? "":POSITION C5,C0:?"RESPONSE
SURFACE MAP OUTPUT"
SI 2440 POSITION C5,C3:?"Response Map Ou
tput Completed"
VQ 2450 POSITION 15,C6:?"OPTIONS":?":POS
ITION 15,7:?"===="
LD 2460 POSITION C5,9:?"START" - Remap
same function with":POSITION 15,10:?"new
Plot Parameters"
ZK 2470 POSITION C5,12:?"OPTION" - Exit
program"
HA 2480 POSITION 7,15:?"Please Make Your
Selection"
JF 2490 IF PEEK<CON>=OPTION THEN 2530
VA 2500 IF PEEK<CON>=START THEN 1810
TW 2510 GOTO 2490
IU 2520 REM ALL DONE - EXIT TO BASIC
YG 2530 GRAPHICS 0:POKE 709,CR1:POKE 710,
CR2:POKE 712,CR4:POKE 82,C2:POKE 752,C
0
UG 2550 ? "Program RSMAP done.":END
FF 2560 REM HANDLE BASIC SYNTAX ERRORS IN
THE PLOT FUNCTION
DU 2570 ? "":GOSUB 2860
YO 2580 POSITION 8,C5:?"There is a synta
x error":POSITION 7,7:?"in your plott
ing function."
AR 2590 POSITION 12,C10:?"BASIC Error #"
;PEEK<195>
IW 2600 POSITION C5,20:?"Press START T
o Re-enter Function"
IY 2610 POSITION C5,21:?"Press OPTION
To Exit Program"
YX 2620 IF PEEK<CON>=START THEN POKE 712,
160:GOTO 1630
BZ 2630 IF PEEK<CON>=OPTION THEN POKE 712
,160:GOTO 2530
RS 2640 GOTO 2620
GW 2650 REM ERROR HANDLING CODE TO HANDLE

```

```

UNREAL PLOT AXIS BOUNDS (MINIMUM GRE
TER THAN MAXIMUM)
FG 2660 GOSUB 2860
ZK 2670 POSITION C0,20:?"The minimum mus
t be less"
YG 2680 POSITION C0,21:?"than the maximu
m value. Try again.":?
AJ 2690 FOR I=C1 TO 300:NEXT I:POSITION C
0,20:? BL$<C1,38>:? BL$<C1,38>
UE 2700 POKE 712,160:RETURN
FU 2710 REM HANDLE PRINTER ERRORS
EW 2720 GOSUB 2860
QE 2730 POSITION 9,C10:?"Printer Error D
etected":POSITION 11,12:?"BASIC Error
#":PEEK<195>
AB 2740 POSITION 13,14:?"Please Correct"
CH 2750 IF PEEK<CON>=OPTION THEN POKE 712
,160:GOTO 2530
EL 2760 IF PEEK<CON>=START THEN 2780
UC 2770 GOTO 2750
WI 2780 FOR I=C10 TO 14:POSITION C0,I:?
BL$<C1,38>:NEXT I
RQ 2790 POKE 712,160:GOTO 2230
AD 2800 REM HANDLE ERRORS IN FUNCTION EVA
LUATION
EV 2810 GOSUB 2860
XH 2820 ? "":POSITION C5,C0:?"RESPONSE
SURFACE MAP OUTPUT"
PT 2830 POSITION 7,C2:?"BASIC Error #":P
EEK<195>;" Occurred":POSITION C4,C3:?
"During Plot Function Evaluation"
PI 2840 FOR I=C1 TO 500:NEXT I:POKE 712,1
60:GOTO 2450
YG 2850 REM ERROR SOUND
HX 2860 POKE 712,50:_SOUND C0,121,10,8:50U
ND C1,128,10,8:_SOUND C2,8,C2,C2:FOR I=
C1 TO 20:NEXT I
FA 2870 FOR I=C0 TO C2:_SOUND I,C0,C0,C0:N
EXT I:RETURN

```

lesson 9: subscripted variables

NEW OWNERS COLUMN

Article on page 54

LISTING 1

Don't type the  TYPO II Codes!

```

EM 10 REM NEW OWNER'S COLUMN PART 9
PR 11 REM BY DAVID PLOTKIN
GN 12 REM (c) 1986, ANTIC PUBLISHING
AI 20 REM LISTING 1: STUDENT TEST SCORES
JU 30 DIM SCORE<30>;AUG=0:REM MAX. OF 30
TEST SCORES
BV 40 STUDENT=1:REM INITIALIZE THE STUDEN
T ID NUMBER
HK 50 READ SCORE:REM GET THE SCORE FROM T
HE DATA STATEMENT
EL 60 IF SCORE=-1 THEN GOTO 100:REM A SC
ORE OF -1 IS IMPOSSIBLE, SO WE USE -1 T
O FLAG THE END OF DATA
EE 70 SCORE<STUDENT>=SCORE:REM PUT THE SC
ORE INTO SINGLY SUBSCRIPTED VARIABLE "SC
ORE".
LG 80 STUDENT=STUDENT+1:GOTO 50:REM GO AR
OUND FOR ANOTHER SCORE.
JQ 100 STUDENT=STUDENT-1:REM WE DID NOT U
SE THE LAST STUDENT (SCORE=-1).
JP 110 GRAPHICS 0:POSITION 8,2:PRINT "STU
DENT TEST SCORES":REM PRINT HEADING

```

```

PX 120 POSITION 8,3:PRINT "TOTAL STUDENTS
":;STUDENT
US 130 POSITION 3,4:PRINT "STUDENT ID #";
:POSITION 25,4:PRINT "TEST SCORE";
TU 140 FOR LOOP=1 TO STUDENT:REM LOOP THR
U THE NUMBER OF STUDENTS
ZZ 150 POSITION 9,LOOP+4:PRINT LOOP:POSIT
ION 28,LOOP+4:PRINT SCORE<LOOP>;AUG=AU
G+SCORE<LOOP>
NE 160 NEXT LOOP
DS 170 POSITION 2,LOOP+4:PRINT "AVERAGE S
CORE IS #";INT<AUG/STUDENT>
NC 180 HIGHSCORE=0:FOR LOOP=1 TO STUDENT:
REM FIND THE HIGH SCORE
UE 190 IF SCORE<LOOP>>HIGHSCORE THEN HIGH
SCORE=SCORE<LOOP>;HIGHSTUDENT=LOOP
MT 200 NEXT LOOP
HJ 210 POSITION 2,LOOP+5:PRINT "HIGH SCOR
E WAS #";HIGHSCORE;" BY STUDENT #";HIGH
STUDENT
NM 250 DATA 91,56,77,89,88,98,56,72,75,81
,78,93,66,-1

```

LISTING 2

```

EM 10 REM NEW OWNER'S COLUMN PART 9
PR 11 REM BY DAVID PLOTKIN
GN 12 REM (C) 1986, ANTIC PUBLISHING
CK 20 REM LISTING 2-STARSHIP SIMULATION
TH 30 DIM UNIVERSE(10,12):REM DIM THE ARR
AY TO HOLD THE VALUES
DM 40 GRAPHICS 0:POKE 752,1:POSITION 3,3:
PRINT "SETTING UP UNIVERSE. PLEASE WAIT"
GH 50 FOR OUTERLOOP=1 TO 10:REM STEP THRU
THE FIRST SUBSCRIPT
YG 60 FOR INNERLOOP=1 TO 12:REM STEP THRU
THE SECOND SUBSCRIPT
MK 70 NUMBERSHIPS=INT(RND(0)*4):REM USE R
ANDOM FUNCTION TO SET UP NUMBER OF SHIPS
PS 80 UNIVERSE(OUTERLOOP,INNERLOOP)=NUMBERSHIPS:REM PUT THE NUMBER IN THE ARRAY
HM 90 NEXT INNERLOOP:REM FINISH UP SECOND
SUBSCRIPT
NE 100 NEXT OUTERLOOP:REM FINISH UP FIRST
SUBSCRIPT
DC 110 PRINT CHR$(125):POSITION 9,0:PRINT
"LINE DRAWING SCAN";
LS 120 FOR LOOP=1 TO 10:POSITION LOOP*3,1
:PRINT LOOP:NEXT LOOP:REM PRINT ROWS
AN 125 FOR LOOP=1 TO 32:POSITION LOOP,2:P
RINT "-":NEXT LOOP
LR 130 FOR LOOP=1 TO 12:POSITION 0,LOOP+2
:PRINT LOOP:NEXT LOOP:REM PRINT COLUMN
PRINT UNIVERSE(10,12)
XL 135 FOR LOOP=1 TO 12:POSITION 2,LOOP+2
:PRINT "0":NEXT LOOP
MW 140 FOR OUTERLOOP=1 TO 10
HO 150 FOR INNERLOOP=1 TO 12
SA 160 POSITION OUTERLOOP*3,INNERLOOP+2:P
RINT UNIVERSE(OUTERLOOP,INNERLOOP)
PJ 170 NEXT INNERLOOP
XM 180 NEXT OUTERLOOP
JC 250 POKE 752,0

```

LISTING 3

```

BX 2 REM NEW OWNER'S COLUMN PART 9
JO 4 REM BY DAVID PLOTKIN
FU 6 REM (C) 1986, ANTIC PUBLISHING
UY 8 REM LISTING 3 - FRACTAL SHAPES
YT 10 COLOR 1
LK 20 DIM D(64,33),PR$(1),A$(1):BX=0:BY=0
ZQ 30 GRAPHICS 0:POSITION 2,5:PRINT "NUMBER
OF LEVELS (3-6)":INPUT LE:IF LE>6 OR
LE<3 THEN 30
NL 35 GOSUB 1200
BL 40 DS=2:FOR N=1 TO LE:DS=DS+2^(N-1):NE
XT N
SK 50 MX=DS-1:MY=MX/2:PI=3.14159:RH=PI*30
/180:VT=RH*1.2
SJ 60 FOR N=1 TO LE:L=10000/1.8^N
LC 70 PRINT "WORKING ON LEVEL ";N
DS 80 IB=MX/2^N:SK=IB*2
DC 90 GOSUB 150:REM ASSIGN HEIGHTS ALONG
X IN ARRAY
UZ 100 GOSUB 220:REM ASSIGN HEIGHTS ALONG
Y IN ARRAY
GJ 110 GOSUB 290:REM ASSIGN HEIGHTS ALONG
DIAG. IN ARRAY
HT 120 NEXT N
HQ 130 GOTO 640:REM DRAW
PR 140 REM HEIGHTS ALONG X
PR 150 FOR YE=0 TO MX-1 STEP SK
AA 160 FOR XE=IB+YE TO MX STEP SK
UC 170 AX=XE-IB:AY=YE:GOSUB 370:D1=D:AX=X
E+IB:GOSUB 370:D2=D
FW 180 D=(D1+D2)/2+RND(0)*L/2-L/4:AX=XE:AY=YE:GOSUB 420
PI 190 NEXT YE

```

```

QJ 200 NEXT YE:RETURN
QJ 210 REM HEIGHTS ALONG Y
TH 220 FOR XE=MX TO 1 STEP -SK
DQ 230 FOR YE=IB TO XE STEP SK
RI 240 AX=XE:AY=YE+IB:GOSUB 370:D1=D:AY=Y
E-IB:GOSUB 370:D2=D
FR 250 D=(D1+D2)/2+RND(0)*L/2-L/4:AX=XE:AY=YE:GOSUB 420
PN 260 NEXT YE
QN 270 NEXT XE:RETURN
FL 280 REM HEIGHTS ALONG DIAGONAL
PR 290 FOR XE=0 TO MX-1 STEP SK
BW 300 FOR YE=IB TO MX-XE STEP SK
MG 310 AX=XE+YE-IB:AY=YE-IB:GOSUB 370:D1=D
LB 320 AX=XE+YE+IB:AY=YE+IB:GOSUB 370:D2=D
QY 330 AX=XE+YE:AY=YE:D=(D1+D2)/2+RND(0)*
L/2-L/4:GOSUB 420
PK 340 NEXT YE
QK 350 NEXT XE:RETURN
UN 360 REM RETRIEVE DATA FROM ARRAY
WB 370 IF AY>MY THEN 390
LX 380 BY=AY:BX=AX:GOTO 400
YC 390 BY=MX+1-AY:BX=MX-AX
IV 400 D=DABS(CINT(BX)),BY):RETURN
MC 410 REM PUT DATA INTO ARRAY
SP 420 IF AY>MY THEN 440
PZ 430 BY=AY:BX=AX:GOTO 450
XT 440 BY=MX+1-AY:BX=MX-AX
ZK 450 D=BX,BY):D:RETURN
ZO 470 RETURN
IH 630 REM DISPLAY HERE
TO 640 GOSUB 1110:REM SET UP SCREEN
PX 650 XS=0.04:YS=0.04:REM SCALING FACTOR
S
HA 660 FOR AX=0 TO MX:X0=-999:FOR AY=0 TO
AX
EY 670 GOSUB 370:ZZ=D:YY=AY/MX*10000:XX=A
X/MX*10000-YY/2
RY 680 GOSUB 940:NEXT AY:NEXT AX
EA 690 FOR AY=0 TO MX:X0=-999:FOR AX=AY T
O MX
EL 700 GOSUB 370:ZZ=D:YY=AY/MX*10000:XX=A
X/MX*10000-YY/2
RT 710 GOSUB 940:NEXT AX:NEXT AY
DG 720 FOR EX=0 TO MX:X0=-999:FOR EY=0 TO
MX-EX
MR 730 AX=EX+EY:AY=EY:GOSUB 370:ZZ=D:YY=A
Y/MX*10000
KT 740 XX=AX/MX*10000-YY/2:GOSUB 940:NEXT
EY:NEXT EX
LR 750 GOTO 1130
WM 760 REM ROTATE
ZQ 770 IF XX<>0 THEN 800
II 780 IF YY<=0 THEN RA=-PI/2:GOTO 820
UI 790 RA=PI/2:GOTO 820
MD 800 RA=ATN(YY/XX)
IX 810 IF XX<0 THEN RA=RA+PI
ZB 820 R1=RA+RH:RD=SQR(XX*XX+YY*YY)
KG 830 XX=RD*COS(R1):YY=RD*SIN(R1)
ZM 840 RETURN
TU 850 REM TILT DOWN
HF 855 IF ZZ<1E-30 THEN ZZ=0
WQ 860 RD=SQR(ZZ*ZZ+XX*XX)
MU 870 IF XX<0 THEN RA=PI/2:GOTO 900
NS 880 RA=ATN(ZZ/XX)
JN 890 IF XX<0 THEN RA=RA+PI
SB 900 R1=RA-VT
VN 910 XX=RD*COS(R1)+XX:ZZ=RD*SIN(R1)
ZJ 920 RETURN
RY 930 REM MOVE OR DRAWTO (XP,YP)
VP 940 GOSUB 470
OS 950 XX=XX*XS:YY=YY*YS:ZZ=ZZ*25
AB 960 GOSUB 770:REM ROTATE
CH 970 GOSUB 855:REM TILT UP
JG 980 IF X0=-999 THEN PR$="M"
MH 985 IF X0<>-999 THEN PR$="D"
XE 990 XP=INT(YY)+CX:YP=INT(ZZ)
XZ 1000 GOSUB 1030
AC 1010 RETURN
GG 1020 REM PLOT LINE HERE
FS 1030 XP=XP*0.625:YP=33.14-0.663*YP:POK
E 77,0
TN 1040 IF PR$="M" THEN X8=XP:Y8=YP:X0=X
YU 1045 IF Y8>179 OR Y8<0 OR YP>179 OR YP
<0 THEN RETURN
IT 1050 PLOT X8,Y8:DRAWTO XP,YP:X8=XP:Y8=
YP:RETURN

```

continued on next page

```

JX 1100 REM SET UP SCREEN
GW 1110 GRAPHICS 8:COLOR 1:POKE 710,0:RET
URN
UP 1130 POKE 764,255:PRINT "PRESS RETURN
TO CONTINUE":INPUT A$
QC 1140 GOTO 30
GY 1200 POSITION 7,12:PRINT "PRESS"
TH 1210 POSITION 2,13:PRINT "# LOW MOUNTA
INS":POSITION 2,14:PRINT "# MED MOUNTA
INS"

```

```

XT 1220 POSITION 2,15:PRINT "# HIGH MOUNT
AINS"
SI 1230 INPUT A$:IF A$<>"1" AND A$<>"2" A
ND A$<>"3" THEN GRAPHICS 0:GOTO 1200
TN 1240 IF A$="1" THEN ZS=0.04
AG 1250 IF A$="2" THEN ZS=0.055
XW 1260 IF A$="3" THEN ZS=0.07
AY 1270 RETURN

```

game of the month

UNCLE HENRY'S NUCLEAR WASTE DUMP

Article on page 35

LISTING 1

Don't type the
TYPO II Codes!

```

ES 10 REM UNCLE HENRY'S NUCLEAR WASTE DUM
P
HQ 20 REM BY JAMES HAGUE
GL 30 REM (C) 1986, ANTIC PUBLISHING
OK 40 BRK=1:IF PEEK(53279)=5 THEN BRK=0
FG 100 GOSUB 9000:REM MAIN INIT.
FX 110 GOSUB 8000:REM TITLE SCREEN
UJ 120 GOSUB 7000:REM GAME INIT.
CI 195 REM MAIN GAME LOOP
MA 200 GOSUB 6000:LAST1=A
PB 210 GOSUB 6000:IF LAST1=A THEN 210
GI 220 LAST2=A
UH 230 TIME=C6-SPEED:POSITION 18,C0:?:#C6
;TIME
BO 240 GOSUB 6000:IF A=LAST1 OR A=LAST2 T
HEN 240
JJ 250 LAST2=LAST1:LAST1=A:CHAR=A
FO 260 X=C9:Y=C3:PLOT X,Y
NY 270 POKE 20,C0
IA 275 REM DECIDE WHERE TO DUMP WASTE
ZU 280 IF PEEK(20)>=90 THEN 360
PZ 290 B=STICK(C0)
GB 300 IF B=11 AND X>C3 THEN A=X-C1:GOTO
340
BB 310 IF B=C7 AND X<16 THEN A=X+C1:GOTO
340
YA 320 IF NOT STRIG(C0) THEN 390
PI 330 GOTO 280
GS 340 COLOR C32:PLOT X,Y:COLOR CHAR:PLOT
A,Y:X=A
BJ 350 SOUND C0,RND(C0)*C10+C10,C2,C6:FOR
A=C1 TO C10:NEXT A:SOUND C0,C0,C0,C0:
GOTO 280
GN 360 TIME=TIME-C1:POSITION 18,C0:?:#C6:
TIME
FJ 370 IF TIME>C0 THEN 270
QX 380 SOUND C0,30,12,C15:FOR A=C1 TO 200
:NEXT A:SOUND C0,C0,C0,C0
KD 385 REM HANDLE FALLING WASTE
TI 390 A=Y+C1:COLOR C32:PLOT X,Y:COLOR CH
AR:PLOT X,A:Y=A
CY 400 LOCATE X,Y+C1,A:IF A<>C32 THEN 430
QT 410 SOUND C0,Y+200,C10,C8:SOUND C1,Y+2
00,C10,C8:A=C2:GOSUB 6100
QC 420 GOTO 390
GX 430 FOR A=C10 TO C15:SOUND C0,50,C8,A:
SOUND C1,150,C8,A:NEXT A
HC 440 FOR A=C15 TO C0 STEP -C1:SOUND C0,
40,C8,A:SOUND C1,125,C8,A:NEXT A
FB 450 LOCATE X-C1,Y+C1,A:IF A=C32 THEN A
=-C1:GOTO 550
NA 460 LOCATE X+C1,Y+C1,A:IF A=C32 THEN A
=-C1:GOTO 550

```

```

SL 470 LOCATE X-C1,Y,A:LOCATE X+C1,Y,B:LO
CATE X,Y+C1,C:IF A=CHAR OR B=CHAR OR C
=CHAR THEN 700:REM LOSE!
RG 480 SCORE=SCORE+C10:POSITION C7,C0:?:#C6:SCORE
LQ 490 IF SCORE>HIGH THEN HIGH=SCORE
UX 500 IF Y=C7 THEN 1000:REM WIN!
IH 510 IF PEEK(633)=13 THEN COLOR 78:PLOT
C1,C6:COLOR 90:PLOT 18,C6
NF 520 GOTO 230
TC 550 A=X+A:COLOR C32:PLOT X,Y:COLOR CHA
R:PLOT A,Y:X=A
ZM 560 A=C5:GOSUB 6100:GOTO 390
SX 695 REM END OF THE WORLD
MB 700 POSITION C7,C3:?:#C6;"OH NO!!"
SN 710 FOR A=C1 TO C3
TD 720 FOR B=48 TO C0 STEP -C1:SOUND C0,B
,C8,C15:SOUND C0,B*C3,C8,C15:POKE 712,
B:NEXT B:NEXT A
SG 730 SOUND C0,50,C8,C15:GRAPHICS 18:A=U
SR(ADR(BOOMS$))
HR 740 GRAPHICS C0:POKE 559,C0:POKE 710,C
0:POKE 752,C1:SOUND C0,C0,C0,C0:SOUND
C1,C0,C0,C0
XG 750 POSITION C4,12:?:CHR$(34);;"Good he
IP is so hard to find.":CHR$(34):POSIT
ION 22,14:?:"-Uncle Henry"
KF 760 COLOR 14:PLOT C0,23:DRAWTO 39,23
PA 770 COLOR 160:FOR A=C0 TO C2:PLOT 28,2
1+A:DRAWTO 30,21+A:NEXT A:PLOT 30,23
TY 780 POSITION 28,20:?"REB":POSITION 28
,19:?"#NN"
NQ 790 COLOR 124:PLOT 29,18:COLOR 19:PLOT
29,17
CL 800 POKE 559,34:A=240:GOSUB 6100
MA 810 GOTO 110
IN 900 IF BRK THEN POKE 16,112:POKE 53774
,112:REM DEBUG
ZH 910 RETURN
BY 995 REM YOU WIN!
UU 1000 POSITION C7,C3:?:#C6;"YAHOO!!"
RU 1010 FOR A=200 TO C10 STEP -C10:FOR B=
C15 TO C10 STEP -C1:SOUND C0,A,C10,B:S
OUND C0,A+25,C10,B:NEXT B:NEXT A
DA 1015 SOUND C0,243,C10,C10:SOUND C1,193
,C10,C10:SOUND C2,162,C10,C10
PQ 1020 GRAPHICS 18:POKE 708,C0
PJ 1030 POSITION C1,C5:?:#C6;"1000 BONUS
POINTS!":A=USR(ADR(RAINBOW$))
SP 1035 FOR A=C0 TO C2:SOUND A,C0,C0,C0:N
EXT A
XL 1040 SCORE=SCORE+1000:IF SCORE>HIGH TH
EN HIGH=SCORE

```

WW 1050 GRAPHICS C0:POKE 559,C0:POKE 710,
C0:POKE 752,C1
ZV 1060 POSITION C2,C10:?: CHR\$(34); "Not b
ad, but why are you glowing?"; CHR\$(34)
XK 1070 POSITION 24,12:?: "-Uncle Henry"
XG 1080 POKE 559,34:A=240:GOSUB 6100
OF 1090 GOTO 110
NY 5995 REM RETURN RANDOM WASTE CHAR C0
EQ 6000 A=INT(RND(C0)*C3)
GW 6010 IF NOT A THEN A=38:GOTO 6040
TO 6020 IF A=C1 THEN A=167:GOTO 6040
GD 6030 A=136
FW 6040 COLOR A
ZD 6050 GOSUB 900
AW 6060 RETURN
ZY 6095 REM WAIT 1-255 JIFFIES C0
TW 6100 GOSUB 900:POKE 20,C0
UH 6110 IF PEEK(20)<A THEN 6110
AM 6120 RETURN
DI 6995 REM GAME INIT.
MJ 7000 GRAPHICS C0:POKE 559,C0:POKE 710,
C0:POKE 752,C1:SCORE=C0
AG 7010 POSITION C5,C10:?: CHR\$(34); "I hop
e you've got insurance.": CHR\$(34)
UU 7020 POSITION 22,12:?: "-Uncle Henry"
ZJ 7030 POKE 559,34:A=180:GOSUB 6100
GU 7040 GRAPHICS 17:POKE 559,C0:POKE 756,
CHSET/C256
DU 7050 POKE 708,26:POKE 709,38:POKE 710,
202:POKE 711,134:POKE 712,C0
HU 7060 POSITION C1,C0:?: #C6;"SCORE:0
\$000"; SPEED;" 0"
QD 7070 COLOR C5:FOR A=C0 TO C2: PLOT A,C7
:DRAWTO A,23: PLOT 17+A,C7: DRAWTO 17+A,
23:NEXT A
TG 7080 PLOT C3,22:DRAWTO 16,22: PLOT C3,2
3:DRAWTO 16,23
KM 7090 COLOR C3: PLOT C2,C7: COLOR C4: PLOT
17,C7
UQ 7100 GOSUB 6000: PLOT C3,21:B=A
ZY 7110 FOR C=C4 TO 16
VS 7120 GOSUB 6000: IF A=B THEN 7120
JU 7130 PLOT C,21:B=A:NEXT C
GD 7140 POKE 559,34:A=30:GOSUB 6100
UI 7150 POSITION C6,C3:?: #C6;"READY...."
XK 7160 A=60:GOSUB 6100
FJ 7170 POSITION C6,C3:?: #C6;" "
XE 7180 POSITION C7,C4:?: #C6;"SET...."
AN 7190 GOSUB 6100
WL 7200 POSITION C7,C4:?: #C6;" "
OZ 7210 POSITION C2,C5:?: #C6;"DUMP THAT W
ASTE!"
OJ 7220 FOR A=C1 TO C4:FOR B=C10 TO C0 ST
EP -C1: SOUND C0,C15,C10,B:SOUND C1,31,
C10,B:SOUND C2,64,C10,B:NEXT B:NEXT A
FE 7230 COLOR 32: PLOT C2,C5:DRAWTO 17,C5
AV 7240 RETURN
PK 7250 REM TITLE SCREEN
FF 8000 POKE 559,C0
IQ 8010 POKE 708,134:POKE 709,C10:POKE 71
0,C0:POKE 711,38:POKE 712,C0
KN 8020 POKE 560,C0:POKE 561,C6
NK 8030 FOR A=C0 TO C3:POKE TITLE+11+A,16
:POKE TITLE+22+A,16:NEXT A
XZ 8040 A\$=STR\$(SCORE):B=LEN(A\$)
JE 8050 FOR A=C1 TO B:POKE 14-B+TITLE+A,A
SC(A\$,A,\$)-C32:NEXT A
QG 8060 A\$=STR\$(HIGH):B=LEN(A\$)
LJ 8070 FOR A=C1 TO B:POKE 25-B+TITLE+A,A
SC(A\$,A,\$)-C32:NEXT A
RW 8080 POKE TITLE+34,SPEED+16
ZM 8090 POKE 559,34
AH 8100 IF PEEK(53279)=C6 OR NOT STRIG(C
0) THEN RETURN
YU 8110 FOR A=C1 TO 25:NEXT A
XL 8120 IF PEEK(53279)<C5 THEN 8100
QN 8130 SPEED=SPEED+C1:IF SPEED>C5 THEN S
PEED=C1
RM 8140 POKE TITLE+34,SPEED+16
FZ 8150 IF PEEK(53279)=C5 THEN 8150
VB 8160 GOTO 8090
IJ 8995 REM MAIN INIT.
VQ 9000 RESTORE 9500:READ C0,C1,C2,C3,C4,
C5,C6,C7,C8,C9,C10,C15,C32,C256,C512
ON 9010 GRAPHICS 18:POKE 708,C0:POKE 712,
56:POSITION C3,C5:?: #C6;"OH NO! IT'S..
."
FH 9020 SPEED=C3:GOSUB 900
CB 9030 DIM MEM\$(1324),BOOM\$(18),RAINBOW\$
(17),A\$(48)

KJ 9040 BOOM\$="hoooooooooooooo"
BB 9050 RAINBOW\$="hoooooooooooooo"
AR 9060 MEM\$="":MEM\$(1324)=""":MEM\$(C2)=
MEM\$
DZ 9070 A=ADR(MEM\$):CHSET=C512-(A-INT(A/C
512)*C512)+A:TITLE=CHSET+C512
ZN 9080 POKE 203,C0:POKE 204,CHSET/C256
DU 9085 A=USR(ADR("hoooooooooooooo"
N10100"))
BX 9090 FOR A=C0 TO 47:READ B:POKE CHSET+
24+A,B:NEXT A
GK 9100 FOR A=C0 TO 29:READ B:POKE 1536+A
:B:NEXT A:POKE 1540,C0:POKE 1541,TITLE
/C256
IA 9110 READ A:IF A=-1 THEN RETURN
GT 9120 READ A\$
NU 9130 FOR B=C1 TO LEN(A\$):C=ASC(A\$(B,B))
:
ZG 9140 IF C<96 THEN C=C-32
IA 9150 POKE TITLE+A+B-C1,C:NEXT B
RZ 9160 GOTO 9110
LE 9495 REM CONSTANTS
UP 9500 DATA 0,1,2,3,4,5,6,7,8,9,10,15,32
,256,512
HW 9525 REM CHARACTER DATA
MW 9530 DATA 248,254,255,255,255,255,
255
HU 9540 DATA 31,127,255,255,255,255,255,2
55
NJ 9545 DATA 255,255,255,255,255,255,
255
LC 9550 DATA 0,254,124,56,16,56,124,254
WH 9560 DATA 0,124,254,254,238,254,254,12
4
TB 9570 DATA 0,254,130,186,170,186,130,25
4
LL 9575 REM TITLE DISPLAY LIST
ME 9580 DATA 112,112,112,66,0,0,112,112,1
12,6,7,112,2,112,112,112,6,6,112,112,1
12,2,7,112,112,112,2,65,0,6
UA 9585 REM TITLE TEXT
UA 9590 DATA 5,SCORE:XXXX HIGH:XXXX SPE
ED:
AH 9600 DATA 43,UNCLE HENRY'S
LG 9610 DATA 61,NUCLEAR WASTE DUMP
ZR 9620 DATA 89,OVER 50 BILLION SERVED
EO 9630 DATA 123,START TO BEGIN
BU 9640 DATA 142,SELECT FOR SPEED
PM 9650 DATA 161,another game from the de
mented mind of
OZ 9660 DATA 204,JAMES HAGUE
AU 9670 DATA 227,CC 1986 Antic Publishin
g
FW 9680 DATA -1

LISTING 2

NX 10 REM UNCLE HENRY'S NUCLEAR WASTE DUM
P, LISTING 2
HQ 20 REM BY JAMES HAGUE
FW 30 REM CC 1985, ANTIC PUBLISHING
BA 35 REM (CREATES LINES 9040, 9050 AND 9
085 FOR LISTING 1)
CQ 40 REM (LINES 10-220 MAY BE USED WITH
OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN\$(20),TEMPS\$(20),AR\$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
WO 70 FN\$="D:LINE\$ LST":REM THIS IS THE N
AME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0?: " ANTIC'S GENERIC
BASIC LOADER"
CD 90 ?, "BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN\$?: "...Plea
se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A\$(LN):
C=1
BK 130 AR\$="":READ AR\$
XW 140 FOR X=1 TO LEN(A\$): STEP 3:POKE 75
2,255
DG 150 LM=LM-1:POSITION 10,10:?: "Countdo
wn...T-";INT(LM/10):"
UY 160 A\$(C,C)=CHR\$(VAL(A\$(X,X+2))):C=C+

continued on next page

```

MZ 1:NEXT X:GOTO 130
170 IF PEEK<195>=5 THEN ? :? :? "NOT
MANY DATA LINES!":? "CANNOT CREATE FIL
E!":END
CZ 180 IF C<LN+1 THEN ? :? "NOT TOO FEW DATA
LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FNS
PP 210 POKE 766,1:?:#1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:?: "COMPLETED."
"
FW 1000 DATA 114

```

```

HX 1010 DATA 0570480520480320660790790770
36061034104169000133020173010210141026
208165020201120144244096034
HQ 1020 DATA 1550570480530480320820650730
78066079087036061034104169001133020140
010212140026208200165020208
WN 1030 DATA 2450960341550570480560530320
65061085083082040065068082040034104169
000133205168169224133206177
RH 1040 DATA 2051452032002082492302042302
06165206201226208239096034041041155

```

moving real things with your Atari

STEPPER MOTOR ROBOT-CONTROLLER

Article on page 62

LISTING 1

Don't type the
TYPO II Codes!

```

ZJ 10 REM STEPPER MOTOR DRIVER PROGRAM
IU 20 REM BY SCOTT KILBOURNE, BILL HALL
AND JON HOLCOMB
GL 30 REM (c) 1986, ANTIC PUBLISHING
OK 40 BRK=1:IF PEEK<53279>=5 THEN BRK=0
NS 50 GOTO 150
OU 60 REM GET ANSWER ROUTINE
ZW 70 TRAP 350:CLOSE #1:OPEN #1,4,0,"K":?
GOSUB 1730:GET #1,ANS:CLOSE #1
MU 80 IF ANS<48 OR ANS>57 THEN 70
ZZ 90 RETURN
UC 100 REM REFRESH CURRENT SETTINGS
YG 110 POKE 752,1:POSITION 0,0:?" □□
□□□□□□ TOP---";TP:?" □DISPLA
Y □ BOTTOM---";L
TI 120 ? " □SETTINGS□ PRESENT-";P:?
" □□□□□□□□□□ SPEED---";R
ZD 130 RETURN
JG 140 REM INITIALIZE ALL VARIABLES
PF 150 A=5:REM STEP 1 PHASE
SG 160 B=6:REM STEP 2 PHASES
AV 170 C=10:REM STEP 3 PHASES
UZ 180 D=9:REM STEP 4 PHASES
WZ 190 E=7:REM HALFSTEP BETWEEN PHASES 1
AND 2
IN 200 F=14:REM HALFSTEP PHASES 2 AND 3
KK 210 G=11:REM HALFSTEP PHASES 3 AND 4
IH 220 H=13:REM HALFSTEP PHASES 4 AND 1
BJ 230 PORTA=54016:REM JOYSTICK PORT 1
FK 240 PACTL=54018:REM PORTA CONTROLLER
YK 250 CONSOL=53279:REM CONSOLE KEYS
JD 260 TXTROW=656:TXTCOL=657
QP 270 DIM BL$<120>;BL$=" ":"BL$<120>=BL$:
BL$<2>=BL$"
GL 280 DELAY=5:REM DELAY VALUE
TI 290 TP=100:REM TOP VALUE TO MOVE TO
WI 300 L=100:REM LOWEST VALUE TO MOVE TO
TX 310 POKE PACTL,56:POKE PORTA,255:POKE
PACTL,60
OF 320 P=1
UY 330 GOSUB 1540
QE 340 REM MAIN PROGRAM
QB 350 REM MASTER MENU
WL 360 DELAY=50:R=50:GRAPHICS 1:POKE 710,
0:GOSUB 110:GOSUB 1730
WT 370 POSITION 0,0:?:#6;"Master menu"
KH 380 ? #6
LM 390 POKE PORTA,255:REM TURNS OFF ALL P
HASSES
SO 400 ? #6;"1-SET TOP OF TRAVEL"
UN 410 ? #6;"2-SET BOTTOM"
UD 420 ? #6;"3-PROGRAMMED MOVE"
JW 430 ? #6;"4-SET SPEED"
HI 440 ? #6;"5-GO UP FAST"
MG 450 ? #6;"6-GO DOWN FAST"
JC 460 ? #6;"7-MOVE TO TOP"

```

```

ZA 470 ? #6;"8-MOVE TO BOTTOM"
NB 480 ? #6;"□□□□□□□□□□□□□□□□"
EG 490 POSITION 0,11:?:#6:BLS
TB 500 POSITION 0,12:?:#6;"YOUR CHOICE";
CHR$<159>
YZ 510 GOSUB 70:REM GET ANSWER
GN 520 TRAP 350:IF ANS<49 OR ANS>56 THEN
350
IE 530 POSITION 1,ANS-47:?:#6;CHR$<30>
YK 540 S=ANS-48:ON 5 GOSUB 560,660,750,93
0,1020,1120,1290,1400
PN 550 GOTO 370
UP 560 POSITION 0,11:?:#6;"Start=Move sta
ge down":?:#6;"stage continues up as yo
u hold start."
YK 570 IF PEEK<CONSOL><>6 THEN 570
ZU 580 ? #6:?:#6;"Select=Menu"
UP 590 POKE PACTL,56:POKE PORTA,255:POKE
PACTL,60
KU 600 POKE PORTA,D:POKE CONSOL,7
WT 610 POKE PORTA,C:POKE PORTA,B:POKE POR
TA,A:P=P+1
SQ 620 POKE TXTROW,0:POKE TXTCOL,28:?:P;""
":POKE TXTROW,2:POKE TXTCOL,28:?:P;""
",XX
630 IF PEEK<CONSOL>=6 THEN 600
BT 640 IF PEEK<CONSOL>=5 THEN 370
YN 650 TP=P:GOTO 630
YF 660 POSITION 0,11:?:#6;"Start=Move sta
ge down":?:#6;"stage continues down as yo
u hold start"
ZD 670 IF PEEK<CONSOL><>6 THEN 670
OH 680 ? #6:?:#6;"Select=Menu"
JQ 690 POKE PORTA,A:POKE CONSOL,7
FR 700 POKE PORTA,B:POKE PORTA,C:POKE POR
TA,D:P=P-1
TG 710 POKE TXTROW,1:POKE TXTCOL,28:?:P;""
":POKE TXTROW,2:POKE TXTCOL,28:?:P;""
",HX
720 IF PEEK<CONSOL>=6 THEN 690
DN 730 IF PEEK<CONSOL>=5 THEN RETURN
DQ 740 L=P:GOTO 720
ST 750 POSITION 0,12:?:#6;"Start=begin mo
ve":REM MOVE BOTTOM TO TOP
ZM 760 IF PEEK<CONSOL><>6 THEN 760
ER 770 ? #6:?:#6;"press SELECT to quit"
QB 780 IF P=TP THEN 910
YI 790 POKE PORTA,H:GOSUB 1510
UF 800 POKE PORTA,D:GOSUB 1510
XD 810 POKE PORTA,G:GOSUB 1510
UT 820 POKE PORTA,C:GOSUB 1510
UU 830 IF PEEK<CONSOL>=5 THEN 920:REM LEA
VE SUBROUTINE
WT 840 POKE PORTA,F:GOSUB 1510
UJ 850 POKE PORTA,B:GOSUB 1510
WH 860 POKE PORTA,E:GOSUB 1510

```

```

TX 870 POKE PORTA,A:GOSUB 1510
NM 880 P=P+1+((P>TP)*-2)
SU 890 POKE TXTROW,2:POKE TXTCOL,28:? P;""
";:POKE CONSOL,7
RH 900 IF P<>TP THEN 780
NX 910 GOSUB 1750:POSITION 0,15:? #6;"MOV
E done!":FOR PAUSE=1 TO
150:NEXT PAUSE:GOSUB 1730
ZJ 920 RETURN
JL 930 POSITION 0,12:? #6;"Choose speed
":REM SET SPEED OF TRAVEL
JS 940 ? #6:? #6;"10=slow 99=fast"
VS 950 GOSUB 70
NR 960 R=ANS-48:? #6:? #6:R;
UW 970 GOSUB 70
UQ 980 ? #6;ANS-48:R=R*10+(ANS-48)
OU 990 POKE TXTROW,3:POKE TXTCOL,28:? R;""
";
BT 1000 DELAY=100-R
AC 1010 RETURN
FM 1020 POSITION 0,12:? #6;"START=UP
":REM GO UP FAST
UC 1030 IF PEEK<CONSOL><>6 THEN 1030
KO 1040 POKE PORTA,D:POKE CONSOL,7
ZE 1050 POKE PORTA,C
YQ 1060 POKE PORTA,B
YC 1070 POKE PORTA,A
OU 1080 P=P+1
IN 1090 POKE TXTROW,2:POKE TXTCOL,28:? P;""
";
XQ 1100 IF PEEK<CONSOL>=6 THEN 1040
AE 1110 RETURN
SU 1120 POSITION 0,12:? #6;"START=DOWN
":REM GO DOWN FAST
UJ 1130 IF PEEK<CONSOL><>6 THEN 1130
IR 1140 POKE PORTA,A:POKE CONSOL,7
YP 1150 POKE PORTA,B
ZJ 1160 POKE PORTA,C
AD 1170 POKE PORTA,D
PP 1180 P=P-1
IP 1190 POKE TXTROW,2:POKE TXTCOL,28:? P;""
";
YW 1200 IF PEEK<CONSOL>=6 THEN 1140
AG 1210 RETURN
TG 1220 REM DISPLAY SETTINGS
JA 1230 POSITION 12,0:? TP:POSITION 12,1
?:L:POSITION 12,2:? P;
YS 1240 POSITION 12,3:? R:RETURN
GB 1250 POKE PORTA,255:REM TURN OFF ALL T
HE PHASES
YQ 1260 ? "PRESS START TO KEEP RUNNING."
CA 1270 IF PEEK<CONSOL><>6 THEN 1270
RW 1280 GOTO 370
AR 1290 POSITION 0,12:? #6;"WORKING...
":REM MOVE TO TOP
BI 1300 IF P=TP THEN 1380
KL 1310 POKE PORTA,D:POKE CONSOL,7
ZB 1320 POKE PORTA,C
YN 1330 POKE PORTA,B

```

```

XZ 1340 POKE PORTA,A
GZ 1350 P=P+1+((P>TP)*-2)
IK 1360 POKE TXTROW,2:POKE TXTCOL,28:? P;""
";
XM 1370 IF P<>TP THEN 1380
CW 1380 ? #6:? #6;"move done":FOR PAUSE=1 TO 150:NEXT PAUSE
BG 1390 RETURN
UP 1400 POSITION 0,12:? #6;"WORKING...
";
ST 1410 IF P=L THEN 1490
IR 1420 POKE PORTA,A:POKE CONSOL,7
YP 1430 POKE PORTA,B
ZJ 1440 POKE PORTA,C
AD 1450 POKE PORTA,D
IR 1460 P=P-1+((P<L)*2)
IP 1470 POKE TXTROW,2:POKE TXTCOL,28:? P;""
";
LX 1480 IF P<>L THEN 1410
OG 1490 ? #6;"move done":FOR PAUSE=1 TO 150:NEXT PAUSE
AJ 1500 RETURN
CQ 1510 FOR Q=1 TO DELAY
BV 1520 IF PEEK<CONSOL>=6 THEN WLOOP=2
RW 1530 NEXT Q:GOSUB 1730:RETURN
JQ 1540 GRAPHICS 17:REM TITLE SCREEN
VO 1550 FOR X=1 TO 3:? #6;"":NEXT X
MR 1560 ? #6;"":NEXT
BO 1570 ? #6;"":Microscope
IO 1580 ? #6;"":Stage driver
EK 1590 ? #6;"":NEXT
BJ 1600 FOR X=1 TO 5:? #6;"":NEXT X
MC 1610 ? #6;"":? #6;"":? #6;""
MR 1620 ? #6;"":BY"
IJ 1630 ? #6;"":SCOTT KILBOURNE"
ZY 1640 ? #6;"":WILLIAM HALL"
IS 1650 ? #6;"":JON HOLCOMB"
QF 1660 ? #6;"":? #6;"":C. P. Atlantic"
BI 1670 ? #6;""
IA 1680 ? #6;"":PRESS START"
XP 1690 FOR WLOOP=0 TO 1 STEP 0
JP 1700 GOSUB 1710:NEXT WLOOP:RETURN
QT 1710 POKE 708,0:POKE 709,15:GOSUB 1510
GU 1720 POKE 708,15:POKE 709,0:GOSUB 1510
:RETURN
AN 1730 POKE 77,0:POKE 764,255:IF BRK THE
N POKE 16,64:POKE 53774,64
AZ 1740 RETURN
FH 1750 DUR=1:LO=57:HI=45:NT=HI
RT 1760 FOR TIME=0 TO DUR*2
EC 1770 SOUND 0,NT,10,14
PP 1780 FOR WT=1 TO 18
BL 1790 IF PEEK<CONSOL>=6 THEN WLOOP=1
XX 1800 NEXT WT
GA 1810 NT=LO:LO=HI:HI=NT
PL 1820 NEXT TIME
XZ 1830 SOUND 0,0,0,0:RETURN

```

ST RESOURCE

STEPPER MOTOR ROBOT-CONTROLLER

Article on page 62

LISTING 1

```

/*
* ST Stepper Motor
* (c) 1986 Antic Publishing
* Version 073086 Wednesday

```

DECEMBER 1986

continued on next page

```

* Written by Patrick Bass
*
* The purpose of this program is to explore creating
* and manipulating a form while performing a job.
*
***** Alcyon Include File *****/
#include      "stepper.h"
#include      "osbind.h"

#define TRUE      (1)
#define FALSE     (0)
#define begin     (
#define end       )
#define wend      )
#define repeat    )
#define next      )
#define endif    )
#define not       !
#define equals    ==
#define does_not_equal !=

#define then      2
#define CONSOL    0
#define PRINTER   0
#define DELAY     for( i=0; i<1000; i++ );
#define LWGET(x)   { (int) *((int *) (x)) }
#define OB_W(x)    { box_address+(x)*sizeof(OBJECT)+20 }
#define OB_H(x)    { box_address+(x)*sizeof(OBJECT)+22 }

typedef struct object
begin
    int          ob_next;
    int          ob_head;
    int          ob_tail;
    unsigned int ob_type;
    unsigned int ob_flags;
    unsigned int ob_state;
    long         ob_spec;
    int          ob_x;
    int          ob_y;
    int          ob_width;
    int          ob_height;
end OBJECT;

typedef struct text_edinfo
begin
    long         te_ptext;
    long         te_ptmplt;
    long         te_pvalid;
    int          te_font;
    int          te_junk1;
    int          te_just;
    int          te_color;
    int          te_junk2;
    int          te_thickness;
    int          te_txtnlen;
    int          te_tmplen;
end TEDINFO;

***** Alcyon Declarations/Equates *****/
int contrl[ 12 ];
intin[ 256 ],  ptsin[ 256 ],

```

```

intout[ 256 ], ptsout[ 256 ],
workin[]={ 1,1,1,1,1,1,1,1,1,2 }, workout[ 57 ],
i, j, k, l, x, y, w, h,
Mtopx, Mtopy, Mbotx, Mboty,
t_x, t_y, t_w, t_h,
b_x, b_y, b_w, b_h,
c_x, c_y, c_w, c_h,
s_x, s_y, s_w, s_h,
top, bottom, current, speed,
delay, drive, dum, gem_handle,
button, pressed, finished, xdial, ydial, wdial, hdial;

char topstring[ 20 ], botstring[ 20 ],
currstring[ 20 ], speedstring[ 20 ],
a, b, c, d;

long box_address;

/*-----*/
main()
begin
    initialize();
    do begin
        move_the_stepper_motor();
        repeat while( not finished );
        terminate();
    end
/*-----*/
initialize()
begin
    appl_init();
    gem_handle=graf_handle( &i, &i, &i, &i );
    v_opnvwk( workin, &gem_handle, workout );
    rsrc_load( "\STEPPER.RSC" );
    rsrc_gaddr( 0, TREE1, &box_address );
    a=5; b=6; c=10; d=9;
    graf_mouse( 0, 0L );
    finished=FALSE;
end
/*-----*/
move_the_stepper_motor()
begin
    x=0; y=0, w=10, h=10;
    form_center( box_address, &xdial, &ydial, &wdial, &hdial );
    find_box_sizes();
    form_dial( 0, x, y, w, h, xdial, ydial, wdial, hdial );
    form_dial( 1, x, y, w, h, xdial, ydial, wdial, hdial );
    objc_draw( box_address, TREE1, 2, xdial, ydial, wdial, hdial );
    do begin

```

continued on next page

```

button=form_do( box_address, 0 );

if( button equals MOVETOP )then move_top();
if( button equals MOVEBOT )then move_bottom();

if( button equals TOPUP )then d_topup();
if( button equals TOPDN )then d_topdn();

if( button equals BOTUP )then d_botup();
if( button equals BOTDN )then d_botdn();

if( button equals CURRUP )then d_curup();
if( button equals CURRDN )then d_curdn();

if( button equals SPEEDUP )then d_speup();
if( button equals SPEEDDN )then d_spedn();

repeat while( button does_not_equal QUIT );

form_dial( 3, x, y, w, h, xdial, ydial, wdial, hdial );
form_dial( 2, x, y, w, h, xdial, ydial, wdial, hdial );
finished=TRUE;
end

/*****
find_box_sizes()
begin
  objc_offset( box_address, TOPNUM, &t_x, &t_y );
  t_w=( LWGET( OB_W( TOPNUM )))-1;
  t_h=( LWGET( OB_H( TOPNUM )))-1;

  objc_offset( box_address, BOTNUM, &b_x, &b_y );
  b_w=( LWGET( OB_W( BOTNUM )))-1;
  b_h=( LWGET( OB_H( BOTNUM )))-1;

  objc_offset( box_address, CURRNUM, &c_x, &c_y );
  c_w=( LWGET( OB_W( CURRNUM )))-1;
  c_h=( LWGET( OB_H( CURRNUM )))-1;

  objc_offset( box_address, SPEEDNUM, &s_x, &s_y );
  s_w=( LWGET( OB_W( SPEEDNUM )))-1;
  s_h=( LWGET( OB_H( SPEEDNUM )))-1;
end

/*****
d_topup()
begin
  top=top+1;
  adjust( TOPNUM, top, &topstring, t_x, t_y, t_w, t_h );
end

/*****
d_topdn()
begin
  if( top>bottom )then begin
    top=top-1;
    adjust( TOPNUM, top, &topstring, t_x, t_y, t_w, t_h );
    if( top<=current )then begin
      current=top;
      d_curdn();
    endif
  endif
end

```

```

end

/*-----*/
d_botup()
begin
    if( bottom<top )then begin
        bottom=bottom+1;
        adjust( BOTNUM, bottom, &botstring, b_x, b_y, b_w, b_h );
        if( bottom>=current )then begin
            current=bottom;
            d_curdn();
        endif
    endif
end

/*-----*/
d_botdn()
begin
    bottom=bottom-1;
    adjust( BOTNUM, bottom, &botstring, b_x, b_y, b_w, b_h );
end

/*-----*/
d_curdn()
begin
    int i;

    current=current-1;
    adjust( CURRNUM, current, &currstring, c_x, c_y, c_w, c_h );
    Bconout( PRINTER, d ); DELAY
    Bconout( PRINTER, c ); DELAY
    Bconout( PRINTER, b ); DELAY
    Bconout( PRINTER, a ); DELAY
end

/*-----*/
d_curdn()
begin
    int i;

    current=current-1;
    adjust( CURRNUM, current, &currstring, c_x, c_y, c_w, c_h );
    Bconout( PRINTER, a ); DELAY
    Bconout( PRINTER, b ); DELAY
    Bconout( PRINTER, c ); DELAY
    Bconout( PRINTER, d ); DELAY
end

/*-----*/
d_SPEUP()
begin
    Speed=Speed+1;
    adjust( SPEEDNUM, Speed, &speedstring, s_x, s_y, s_w, s_h );
end

/*-----*/
d_spedn()
begin
    if( Speed>0 )then begin
        Speed=Speed-1;
        adjust( SPEEDNUM, Speed, &speedstring, s_x, s_y, s_w, s_h );
    endif

```

continued on next page

end

```
/*-----*/
adjust( object, variable, string, x, y, w, h )
int object, variable, x, y, w, h;
char *string;
begin
    ftoa( (float)variable, string, 0 );
    set_text( box_address, object, string );
    objc_draw( box_address, object, 1, x, y, w, h );
    beep( 0, 1, 50 );
end
```

```
/*-----*/
set_text( tree_address, obj_number, string_address )
OBJECT *tree_address;
int obj_number;
char *string_address;

begin
    TEDINFO *obj_specification;
```

```
    obj_specification=(TEDINFO *) (tree_address+obj_number)->ob_spec;
    obj_specification->te_ptext=( string_address );
    obj_specification->te_txtlen=( 4 );
end
```

```
/*-----*/
```

```
move_top()
begin
    int i, j, k, mx, my, pressed, key;

    for( i=current; i<top; i++ )begin
        graf_mkstate( &mx, &my, &pressed, &key );
        if( pressed )then i=top;
        if( not pressed )then begin
            d_cup();
            for( j=0; j<speed; j++ )begin
                for( k=0; k<500; k++ );
            next
        endif
    next
    beep( 0, 2, 15000 );
    beep( 0, 1, 15000 );
    beep( 0, 2, 15000 );
end
```

```
/*-----*/
```

```
move_bottom()
begin
    int i, j, k, mx, my, pressed, key;

    for( i=current; i>bottom; i-- )begin
        graf_mkstate( &mx, &my, &pressed, &key );
        if( pressed )then i=bottom;
        if( not pressed )then begin
            d_curdn();
            for( j=0; j<speed; j++ )begin
                for( k=0; k<500; k++ );
            next
        endif
    next
end
```

TYPO ST codes for Deduction!

Don't type these.

1000	:07FC
1010	:0879
1020	:0E26
1030	:00EB
1040	:07E7
1050	:06D8
1060	:0E3A
1070	:00EF
1080	:0603
1090	:08A6
1100	:071E
1110	:08A1
1120	:05D4
1130	:097C
1140	:05D2
1150	:040C
1160	:0AC1
1170	:08B5
1180	:04CA
1190	:06C2
1200	:0B2C
1210	:058B
1220	:0713
1230	:05C8
1240	:05F6
1250	:07EE
1260	:03D2
1270	:051F
1280	:0803
1290	:03D5
1300	:04A4
1310	:0818
1320	:0A5F
1330	:04B4
1340	:045B
1350	:0717
1360	:0679
1370	:0420
1380	:02ED
1390	:067A
1400	:0871
1410	:088B
1420	:06EC
1430	:07C3
1440	:053D
1450	:0479
1460	:0890
1470	:0720
1480	:07C8
1490	:04F8

```

beep( 0, 2, 15000 );
beep( 0, 1, 15000 );
beep( 0, 2, 15000 );
end

/*-----*/
beep( notelo, notehi, delay )
char notehi;
int notelo, delay;

begin
    int Portstate;

    Giaccess( 15, 8+128 );
    Giaccess( 0, 128 );
    Portstate=Giaccess( Portstate, 7 );
    Giaccess( 60, 7+128 );

    Giaccess( notelo, 0+128 );
    Giaccess( notehi, 1+128 );

    for( i=0; i<delay; i++ );
    Giaccess( 0, 0+128 );
    Giaccess( 0, 1+128 );

    Giaccess( Portstate, 7+128 );
    Giaccess( 0, 8+128 );
end

/*-----*/
terminate()
begin
    rsrcc_free();
    v_c1suwk( gem_handle );
    appl_exit();
end

```

ST RESOURCE

DEDUCTION!

Article on page 89

LISTING 1

```

1000  'ST Classics:  MASTERMIND
1010  '(c)1986 Antic Publishing
1020  'Written by Paul Pratt & Steven Evermann
1030  '
1040  defint A, Z:gosub KOLOR
1050  Ax=GB:MOUSE=Peek( Ax+12 )
1060  fullw 2:clearw 2:randomize 0:TRUE=1:FALSE=0
1070  '
1080  clearw 2:color 1
1090  gotoxy 22, 0: Print "*****"
1100  gotoxy 22, 1: Print " "      " "
1110  gotoxy 22, 2: Print "*****"
1120  TXT=4:gosub TEXT

```

1500	:03EE
1510	:074F
1520	:03D1
1530	:03B3
1540	:0458
1550	:01D4
1560	:0365
1570	:03D4
1580	:04CF
1590	:0330
1600	:1281
1610	:122A
1620	:0881
1630	:050D
1640	:04E3
1650	:02C7
1660	:099C
1670	:0729
1680	:0358
1690	:0370
1700	:02BF
1710	:03ED
1720	:073A
1730	:04C2
1740	:0727
1750	:072E
1760	:036E
1770	:01F2
1780	:0401
1790	:0644
1800	:0735
1810	:0741
1820	:0649
1830	:048E
1840	:036D
1850	:0667
1860	:0FEA
1870	:08D8
1880	:03D8
1890	:0C9D
1900	:0F80
1910	:0315
1920	:03AC
1930	:0AOB
1940	:03F2
1950	:08FB
1960	:03F5
1970	:0932
1980	:07ED
1990	:079C
2000	:06AC
2010	:08CF
2020	:0283
2030	:0775
2040	:081F
2050	:08D4
2060	:0287
2070	:07BC
2080	:0600

continued on next page

```

1138 gotoxy 24, 1: print "DEDUCTION"
1140 TXT=0:gosub TEXT
1150 color 1, 8, 14
1160 gotoxy 17, 17: print " ACCEPT REJECT";
1170 gotoxy 25, 4: print "ANSWER"
1180 'answer box
1190 C=1:F=8:BX=206:BY=35:L=38
1200 W=89:gosub BOX:fill 229, 41:fill 269, 40
1210 BY=49:L=18:W=18:F=11
1220 for BX=210 to 281 step 21
1230 gosub BOX:next
1240 'deduction box
1250 F=0:C=14:BX=203:BY=6:L=17:W=94
1260 gosub BOX
1270 'message box
1280 F=0:C=1:BX=206:BY=79:W=89:L=67
1290 gosub BOX
1300 'accept box
1310 F=7:C=1:BX=150:BY=152:W=72:L=12
1320 gosub BOX:fill 164, 158:fill 196, 157
1330 'reject box
1340 F=2:BX=222:W=72
1350 gosub BOX:fill 236, 157
1360 color 1, 11:fill 3, 100
1370 gosub MENU
1380 COLUM=13
1390 'guessing boxes
1400 W=26:F=8:L=8:C=1:COLUM=COLUM-1
1410 for BY=6 to COLUM*12-4 step 12
1420 for BX=30 to 137 step 28
1430 gosub BOX:next:next
1440 'reply boxes
1450 W=8:F=8:L=8:C=9
1460 for BY=6 to COLUM*12-4 step 12
1470 for BX=151 to 193 step 12
1480 gosub BOX:next:next
1490 gosub INITIAL
1500 'pointer
1510 F=1:C=1:BX=10:BY=8:L=4:W=17
1520 gosub BOX
1530 gosub 2350
1540 ROW=1:COLUM=1
1550 FO=?
1560 MAINLOOP:
1570 gosub RAT
1580 F=INT( ( MX-10 )\20 )
1590 IST=9+D*20
1600 if MB=1 and MX>IST and MX<150 and YOK and FO<>F then gosub CHOOSE
1610 if MB=1 and MX>222 and MX<294 and MY>173 and MO<>MX then gosub 1700
1620 if ROW =5 then gosub ACCEPT
1630 if MB=2 then 2230
1640 goto MAINLOOP
1650 CHOOSE:
1660 color 1, CO( F ):FO=F:GUSC ROW )=CO( F )
1670 fill ROW*28+14, COLUM*12-2
1680 ROW=ROW+1
1690 return
1700 REJECT:
1710 gosub 2350:
1720 if ROW>1 then ROW=ROW-1
1730 color 1, 8:FO=?
1740 fill ROW*28+14, COLUM*12-2
1750 for DELAY=1 to 10:next
1760 return
1770 BOX:
1780 color 1, F, C
1790 linef BX, BY, BX, BY+L
1800 linef BX, BY+L, BX+W, BY+L
1810 linef BX+W, BY+L, BX+W, BY
1820 linef BX+W, BY, BX, BY
2090 :0604
2100 :0A53
2110 :0A77
2120 :0756
2130 :03CF
2140 :04AA
2150 :0EE8
2160 :030D
2170 :0403
2180 :0404
2190 :03CD
2200 :050C
2210 :075B
2220 :055F
2230 :02D1
2240 :03EC
2250 :04D3
2260 :06A9
2270 :0420
2280 :03FO
2290 :03AB
2300 :06A4
2310 :07E3
2320 :09E7
2330 :03D1
2340 :0347
2350 :00F1
2360 :047A
2370 :0C9A
2380 :0D93
2390 :08D6
2400 :084C
2410 :08E5
2420 :0368
2430 :01EA
2440 :0423
2450 :0589
2460 :058D
2470 :0579
2480 :0CC5
2490 :036F
2500 :0288
2510 :03C5
2520 :0499
2530 :0620
2540 :04E0
2550 :06E6
2560 :06AC
2570 :058D
2580 :0504
2590 :0772
2600 :0368
2610 :01F1
2620 :0E8B
2630 :0BB1
2640 :036C
2650 :0377

```

```

1830 fill BX+2, BY+2
1840 return
1850 ACCEPT:gosub EMPTY
1860 gotoxy 23, 10: Print " ACCEPT":gotoxy 23, 12: Print " OR "
1870 gotoxy 23, 14: Print " REJECT"
1880 gosub RAT
1890 if MB=1 and MX>149 and MX<222 and YOK then 1920
1900 if MB=1 and MX>222 and MX<294 and YOK and MO<>MX then 1700
1910 Goto 1880
1920 BLK=0:WHT=0
1930 gosub 2350: PRINT SELECT 4 colors
1940 for X=1 to 4
1950 if GUS( X )=PAT( X ) then BLK=BLK+1
1960 for Y=1 to 4
1970 if GUS( X )=PAT( Y ) then WHT=WHT+1
1980 next:next:WHT=WHT-BLK
1990 color 1, 0:for X=1 to WHT
2000 fill X*12+146, COLUMN*12-2
2010 sound 1, 10, 3, 5, 5:sound 1, 0, 0, 0, 0
2020 next
2030 color 1, 1:for X=1 to BLK
2040 fill ( X+WHT )*12+146, COLUMN*12-2
2050 sound 1, 10, 3, 6, 5:sound 1, 0, 0, 0, 0
2060 next
2070 F=11:C=11:BX=10:BY=COLUMN*12-4
2080 L=4:W=17:gosub BOX
2090 ROW=1:COLUMN=COLUMN+1
2100 if BLK=4 then gosub WIN:goto 2230
2110 if COLUMN>12 then MB=2:F0=8:return
2120 F=1:C=1:BX=10:BY=COLUMN*12-4
2130 gosub BOX
2140 F0=7:return
2150 if FL=0 then TRY5=TRY5-1:gotoxy 13, 7: Print TRY5
2160 INITIAL:
2170 RANDOMIZE 0
2180 for X=0 to 6
2190 TEMP=PAT( X )
2200 Y=INT( RND*( 7-D ) )+D
2210 PAT( X )=PAT( Y ):PAT( Y )=TEMP
2220 next:return
2230 ANSWER:
2240 for X= 1 to 4
2250 color 1, PAT( X )
2260 fill X*18+205, 51:next
2270 gosub MENU
2280 for X= 1 to 4
2290 color 1, 11
2300 fill X*18+205, 51:next
2310 if COLUMN>12 then goto 1400
2320 F=11:C=11:BX=10:BY=COLUMN*12-4:W=17:L=4
2330 gosub BOX
2340 goto 1400
2350 '
2360 gosub EMPTY
2370 color 11: gotoxy 23, 9: Print "RIGHT=ANSW"
2380 color 1: gotoxy 23, 10: Print string$ 11, 249 )
2390 gotoxy 23, 11: Print " SELECT"
2400 gotoxy 23, 13: Print " FOUR"
2410 gotoxy 23, 15: Print " COLORS"
2420 return
2430 RAT:
2440 gmsys( 79 )
2450 MX=Peek( MOUSE+2 )
2460 MY=Peek( MOUSE+4 )
2470 MB=Peek( MOUSE+6 )
2480 YOK=FALSE: if MY>174 and MY<186 then YOK=TRUE
2490 return
2500 KOLOR:
2510 dim KOL$( 16 )

```

2660	:09C4
2670	:0C31
2680	:05DC
2690	:0CD7
2700	:0A7A
2710	:089F
2720	:073C
2730	:0926
2740	:049B
2750	:0580
2760	:07DE
2770	:05DC
2780	:04DA
2790	:05D4
2800	:0596
2810	:036B
2820	:023B
2830	:047C
2840	:0894
2850	:05DC
2860	:09DE
2870	:05DD
2880	:0BOE
2890	:09B5
2900	:09EF
2910	:09FF
2920	:03D4
2930	:0FC0
2940	:04FC
2950	:0584
2960	:0518
2970	:0562
2980	:0373
2990	:029D
3000	:036F
3010	:03C2
3020	:0703
3030	:0285
3040	:0367
3050	:0247
3060	:0981
3070	:09A0
3080	:032E
3090	:036C

continued on next page

```

2520 restore 2550
2530 for A=0 to 15:read B
2540 KOLz( A )=B:next
2550 data 1911, 1792, 112, 51, 775, 80
2560 data 5, 1365, 546, 101, 51, 1904
2570 data 1796, 1360, 1285, 0
2580 defdb1 K: K = 1114
2590 Poke K, varptr( KOLz( 0 ) )
2600 return
2610 WIN:
2620 for Y=1 to 3: for X=7 to 10: sound Y, 13, X, 5+Y, 2: next
2630 next: for Y=1 to 3: sound Y, 0, 0, 0: next
2640 return
2650 KOLORBOX:
2660 gosub EMPTY: TXT=1:gosub TEXT
2670 color 5: gotoxy 23, 9: print " RESETTING "
2680 TXT=0:gosub TEXT
2690 color 1:gotoxy 23, 10: print STRING$( 11, 249 )
2700 gotoxy 25, 11: print chr$( 189 );" 1986"
2710 gotoxy 23, 13: Print " PRATT "
2720 gotoxy 23, 14: Print " & "
2730 gotoxy 23, 15: Print " EVERMAN "
2740 restore 2800
2750 BY=152: C=1: W=12: L=12
2760 for BX=10+D*20 to 130 step 20
2770 read F: X=( ( BX-10 )/20 )
2780 CO( X )=F: PAT( X )=F
2790 gosub BOX: next
2800 data 2, 14, 7, 10, 4, 13, 12
2810 return
2820 MENU:
2830 gosub EMPTY
2840 gosub RAT: if MB<>0 then 2840
2850 TXT=1:gosub TEXT
2860 gotoxy 23, 9: print "CLICK MOUSE"
2870 TXT=0:gosub TEXT
2880 gotoxy 23, 10: print string$( 11, 249 )
2890 gotoxy 23, 11: Print "LEFT = EASY"
2900 gotoxy 23, 13: Print "RIGHT= HARD"
2910 gotoxy 23, 15: Print "BOTH to END"
2920 gosub RAT
2930 if MB=1 then D=1:BX=10:BY=152:C=6:F=11:W=12:L=12:gosub BOX
2940 if MB=2 then D=0
2950 if MB=3 then end
2960 if MB=0 then 2920
2970 gosub KOLORBOX
2980 return
2990 EMPTY:
3000 color 1, 0
3010 FOR X=9 to 15
3020 gotoxy 23, X: print " "
3030 next
3040 return
3050 TEXT:
3060 Poke CONTRL, 106:Poke CONTRL+2, 0
3070 Poke CONTRL+6, 1:Poke INTIN, TXT
3080 VDISYSC( 0 )
3090 return

```

ADVERTISERS LIST

Be sure to mention ANTIC when contacting these advertisers—all of whom support the Atari Computer.

READER SERVICE NO.	PAGE NO.	READER SERVICE NO.	PAGE NO.		
ABBY'S DISCOUNT SOFTWARE	078	28	HAPPY COMPUTERS	033	94
ACTIVISION	081, 082, 083	52, 57, 74	MAD SCIENTIST	039	128
ADVANCED LANGUAGE DESIGNS	005	128	MAGNA SYSTEMS		17
ALLEN MICROWARE	006	128	MICROCUBE	045	29
ALPHA SYSTEMS	007	21	MTS SOFTWARE	092	68
AMERICAN TV	009	96	PROTECTO	055	32, 33, 92, 93
ANTIC		34, 66, 70, 98	REEVES SOFTWARE	094	129
ASTRA SYSTEMS	012	24, 25	S & S WHOLESALERS	057	9
B AND C COMPUTEVISIONS	010	128	SOFTWARE DISOUNTERS	060	20
BLACK PATCH	014	84, 85	SUBLOGIC	065	131
CARINA	019	76	TEVEX	068	100
COMPUTER CREATIONS	019	76	TERRIFIC PERIPHERALS	067	56
COMPUWARE	088	128	UNLIMITED SOFTWARE	095	129
COVOX	022	77	VIRTUSONICS	071	42, 43
DUPLICATION TECHNOLOGY	026	44, 45	WHITE HOUSE COMPUTERS	074	2
ELECTRONIC ONE	027	69	ZOBIAN CONTROLS	076	7
GENIE	032	36			

ST ADVERTISERS LIST

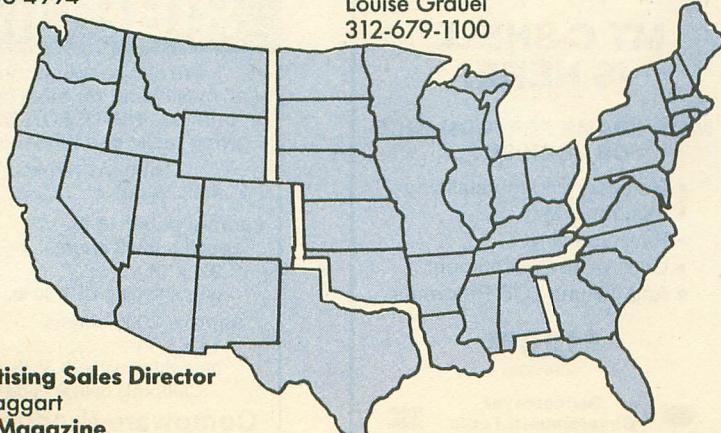
READER SERVICE NO.	PAGE NO.	READER SERVICE NO.	PAGE NO.		
ABACUS	001, 002	41, 83	MEGAMAX	040	88
ACCOLADE	079	16	METACOMCO	051	88
ACTION SOFTWARE	004, 041, 070	60, 81, 90	MIDISOFT	091	129
ACCUSOFT	080	128	MICROPROSE	048	14
AERCO	084	96	MICHTRON	043	90
ARTWORX	003	17	MILES COMPUTING	050	86
ATARI	008	39, 65, 75	PALO ALTO SHIPPING		90
BATTERIES, INC.	011, 017	80	PROCO PRODUCTS	053	77
BECKMEYER DEVELOPMENTAL	013	128	ORIGIN SYSTEMS	042	132
BMW & ASSOCIATES	015	53	PROGRESSIVE COMPUTER APPS.	085	46
CENTRAL POINT	016	60	REGENT SOFTWARE	056	29
25TH CENTURY	087	129	S.S.I.	085	58
DAC EASY	089	37	SHELBOURNE SOFTWARE	059	49
DISCLONE	024	81	STATIC ENGINEERING	064	39
DIVERSE DATA	025	77	SZABO SOFTWARE	096	87
DR. T'S MUSIC SOFTWARE	090	45	TDI	066	88
ISD MARKETING	035, 036	38, 40	TIMWORKS	069	10
LOGICAL DESIGN WORKS	037	56	TERRIFIC PERIPHERALS	097	81
LYCO	038	4, 78, 79	XLENT	075	91

This list is provided as a courtesy to our advertisers. ANTIC does not guarantee accuracy or comprehensiveness.

ADVERTISING SALES

Phoebe Thompson Associates

Phoebe Thompson
408-356-4994



Advertising Sales Director
John Taggart
Antic Magazine
524 Second St.
San Francisco, CA 94107
(415) 957-0886

The Parris Group
Louise Grael
312-679-1100

Phoebe Thompson Associates
15640 Gardenia Way
Los Gatos, CA 95030
PHOEBE THOMPSON
408-356-4994

The Parris Group
4761 W. Touhy Ave.
Lincolnwood, IL 60646
LOUISE GRAUEL
312-679-1100

Garland Associates
10 Industrial Park Rd.
Hingham, MA 02043
PETER HARDY
617-749-5852

Address all advertising materials to:
Katherine Murphy
Advertising Production Coordinator
Antic Magazine
524 Second Street
San Francisco, CA 94107

Garland Associates
Peter Hardy
617-749-5852

Advan BASIC

"spectacular....an expanded BASIC with powerful new commands...brilliant work...send away for your copy today. You will not regret it." Apr86 ANTIC magazine

"great...easy to use...I heartily recommend the package" Aug86 ANALOG magazine

***FAST:** Compiles. Short programs run upto 20 times faster than in ATARI BASIC. Long programs upto 100 times faster. ***POWERFUL:** Real, integer, and string arrays and variables. Strings are not dimensioned. IF THEN ELSE, REPEAT, WHILE, CASE, and multi-line IF commands. Functions and subroutines with up to 4 arguments. 8 PM and 3 sound commands. ***ONLY \$39.95.** Includes prog. which converts many ATARI BASIC prog. to ADVAN form. Needs 1 disk drive & 800XL/XE/48K 800. VISA/MC accepted. Shipping \$3.95 in N.A.

ADVN LANGUAGE DESIGNS
Box 159 Baldwin, KS 66006
(913)-594-3420

CIRCLE 005 ON READER SERVICE CARD

AccuSoft® Presents ST BASIC PIZZAZZ Without the Price!

You've invested in a powerful machine — the Atari ST. But you find it's tough writing fancy programs.

Now you can express your creativity... Show off the impressive ST graphics capabilities... Without having to learn a complex new language!!!

ST Tools I — Over 60 easy-to-use Basic subroutines for GEM File Selector and Dialog Boxes, VDI Graphics, and more... without having to type any more PEEKS or POKEs!! Includes softcopy documentation ... \$12.95

ST Demos I — Six compiled programs (music, games, graphics, utilities) plus the original ST Basic source code to modify or use in your own programs. Plus ST Basic tips. A great learning tool..... \$12.95

Both the above disks — A perfect couple..... \$19.95

ST Basic Developer's Kit — Create programs quickly with the Atari Basic Interpreter, then compile them as is to get programs that run directly from the desktop 5-40 times faster than normal!! Package includes LDW ST Basic Compiler, manual, plus both ST Tools I and ST Demos I. *Everything you need* only \$79.95

Write for FREE

AccuSoft®
Dept. 5A MC/VISA (include expiration)
P.O. Box 02214 All orders — add \$2 shipping
Columbus, OH 43202 Ohio residents add 5.5% tax

CIRCLE 080 ON READER SERVICE CARD

GTIA \$4.50
850 ROM \$12.00
SUPER SPECIAL!!
XL ANTIC \$12.00
810 DISK DRIVE IN BROWN PLASTIC CASE
WITH I/O CABLE AND POWER SUPPLY
BASIC REVC \$110
WITH HAPPY V7.0 \$199.95
XL/XE OS \$12.00
XL/XE OS \$12.00

Complete working 810 Less case \$120.00 (\$100.)
With B&C Black Anodized Case \$140.00 (\$120.)
With Case and Happy Upgrade \$220.00 (\$200.)
Field Service Manuals 800/400, 800XL or 810 \$25. ea
For 1050, 1025, 825, 850 or 1200XL \$20. ea
Diagnostic Cartridges Computer or Disk \$25. ea
810 Happy Upgrade \$199.95
(\$ Prices in () do not include I/O Cable or Power Pak

B&C computervisions (408) 749-1003
3283 Kifer Rd., Santa Clara, CA 95051

CIRCLE 010 ON READER SERVICE CARD

XL/XE BOSS II for 130xe, 880xl, 1200xl

the XL BOSS has been completely rewritten--more compatibility plus new features:

- * runs more software
- * monitor now built-in
- * coldstart with custom OS.
- * disassembler added
- * coldstart and keep user OS.
- * create and save your own OS.
- * same great console commands
- * coldstart from console keys
- * BASIC off default-on with OPT.
- * dual Operating System board
- * use stock or custom OS.

NEW PRICE
\$59.95 US
cal res. add 6.5%
foreign add 3.00
cod add 3.00
no charge cards

Allen Macroware po box2285
redondo bch CA 90278
213 3764105

CIRCLE 006 ON READER SERVICE CARD

HL 256K MacroRam board for the 800XL

- * no solder on socketed machines
- * use as ramdisk or extra ram
- * upgrade single drive systems
- * maximize multiple drive sys.
- * fast animation-page flipping
- * 3 times the extra ram as 130xe
- * same bank area as 130xe
- * includes multidensity Ramdisk
- * user selectable 3 densities
- * page flipping-fast load demos
- * with or without ram chips

8 256K-150ns ramchips opt.
less ram \$49.95
with ram 82.95
cal res. add 6.5%
foreign add 3.00
cod add 3.00
no charge cards

Allen Macroware po box2285
redondo bch CA 90278
213 3764105

CIRCLE 006 ON READER SERVICE CARD

CARDIAC ARREST!

for 800/XL/XE or ST
\$69
with 48-page manual

The ultimate adventure — because it's real. "Cardiac Arrest!" is an incredible cardiac resuscitation simulator — so stimulating, it's like a medical adventure game for doctors, nurses, or paramedics. Or for someone who wants to play doctor.

You interpret the on-screen EKG and vital signs, type your order (in regular English), and see what happens. You won't believe this simulator runs on a home computer. Over three years in development by an emergency physician.

Other ACLS Software:

EKG Teaching \$29
Protocol Learning \$29
CardioQuiz \$19

Mad Scientist Software
2063 N. 820 W., Pleasant Grove, UT 84062
801-785-3028

CIRCLE 039 ON READER SERVICE CARD

THE WAIT IS OVER!

MT C-SHELL™ IS HERE.

MAIN FRAME PERFORMANCE FOR YOUR ST . . .

- Multiuser and Multitasking
- Electronic Mail
- Print Spooling
- Unix™ Like Environment
- And it Runs TOS Programs

\$12995
COMPLETE

**Beckemeyer
Development Tools**



592 JEAN STREET, #304, OAKLAND, CA 94610
415/658-5318

PRINTER

RIBBONS

We can supply ribbons
($\frac{1}{2}$ " max. wide) for most computer
printers. **WRITE FOR QUOTE**
giving make and model number.

Ribbons reinked
($\frac{1}{2}$ " max. wide) \$5.00

Fanfold paper 18 lb.

approx. 3000 sheets

9 $\frac{1}{2}$ x 11 \$20.00
plus shipping UPS 30 lb.

approx. 3000 sheets

14 $\frac{1}{2}$ x 11 \$28.00
plus shipping UPS 35 lb.

California delivery add 6%

Comware Products Co.

P.O. Box 1711
Whittier, CA 90609

CIRCLE 088 ON READER SERVICE CARD

U.S. Postage
STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION
Approved by the U.S. Post Office

1. TITLE OF PUBLICATION
ANTIC, THE ATARI RESOURCE

2. FREQUENCY OF ISSUE
Monthly

3. NO. OF ISSUES PUBLISHED
12

4. ADDRESS OF PUBLISHER (Street, City, State and Zip Code) (if not same as 1)
Allen Publishing, 524 Second Street, San Francisco, CA 94107

5. ADDRESS OF EDITOR, MANAGING EDITOR (Street, City, State and Zip Code) (if not same as 1)
James Caparrell, 524 Second St., San Francisco, CA 94107

6. ADDRESS OF PUBLISHER (Street, City, State and Zip Code) (if not same as 1)
David Brubach, 524 Second St., San Francisco, CA 94107

7. NAME AND ADDRESS OF PERSON IN CHARGE OF CIRCULATION
John Caparrell, 524 Second St., San Francisco, CA 94107

8. FULL NAME
COMPLETE MAILING ADDRESS
James Caparrell
21 Wolf Neck Ridge, Pleasanton, CA 94565

9. FULL NAME
COMPLETE MAILING ADDRESS
John Caparrell
21 Wolf Neck Ridge, Pleasanton, CA 94565

10. FULL NAME
COMPLETE MAILING ADDRESS
John Caparrell
21 Wolf Neck Ridge, Pleasanton, CA 94565

11. FOR COMPLETION BY NEWSPAPER ORGANIZATIONS ONLY
12. FOR COMPLETION BY MAILING AGENTS ONLY
13. FOR COMPLETION BY MAILING AGENTS ONLY
14. FOR COMPLETION BY MAILING AGENTS ONLY
15. FOR COMPLETION BY MAILING AGENTS ONLY
16. FOR COMPLETION BY MAILING AGENTS ONLY
17. FOR COMPLETION BY MAILING AGENTS ONLY
18. FOR COMPLETION BY MAILING AGENTS ONLY
19. FOR COMPLETION BY MAILING AGENTS ONLY
20. FOR COMPLETION BY MAILING AGENTS ONLY
21. FOR COMPLETION BY MAILING AGENTS ONLY
22. FOR COMPLETION BY MAILING AGENTS ONLY
23. FOR COMPLETION BY MAILING AGENTS ONLY
24. FOR COMPLETION BY MAILING AGENTS ONLY
25. FOR COMPLETION BY MAILING AGENTS ONLY
26. FOR COMPLETION BY MAILING AGENTS ONLY
27. FOR COMPLETION BY MAILING AGENTS ONLY
28. FOR COMPLETION BY MAILING AGENTS ONLY
29. FOR COMPLETION BY MAILING AGENTS ONLY
30. FOR COMPLETION BY MAILING AGENTS ONLY
31. FOR COMPLETION BY MAILING AGENTS ONLY
32. FOR COMPLETION BY MAILING AGENTS ONLY
33. FOR COMPLETION BY MAILING AGENTS ONLY
34. FOR COMPLETION BY MAILING AGENTS ONLY
35. FOR COMPLETION BY MAILING AGENTS ONLY
36. FOR COMPLETION BY MAILING AGENTS ONLY
37. FOR COMPLETION BY MAILING AGENTS ONLY
38. FOR COMPLETION BY MAILING AGENTS ONLY
39. FOR COMPLETION BY MAILING AGENTS ONLY
40. FOR COMPLETION BY MAILING AGENTS ONLY
41. FOR COMPLETION BY MAILING AGENTS ONLY
42. FOR COMPLETION BY MAILING AGENTS ONLY
43. FOR COMPLETION BY MAILING AGENTS ONLY
44. FOR COMPLETION BY MAILING AGENTS ONLY
45. FOR COMPLETION BY MAILING AGENTS ONLY
46. FOR COMPLETION BY MAILING AGENTS ONLY
47. FOR COMPLETION BY MAILING AGENTS ONLY
48. FOR COMPLETION BY MAILING AGENTS ONLY
49. FOR COMPLETION BY MAILING AGENTS ONLY
50. FOR COMPLETION BY MAILING AGENTS ONLY
51. FOR COMPLETION BY MAILING AGENTS ONLY
52. FOR COMPLETION BY MAILING AGENTS ONLY
53. FOR COMPLETION BY MAILING AGENTS ONLY
54. FOR COMPLETION BY MAILING AGENTS ONLY
55. FOR COMPLETION BY MAILING AGENTS ONLY
56. FOR COMPLETION BY MAILING AGENTS ONLY
57. FOR COMPLETION BY MAILING AGENTS ONLY
58. FOR COMPLETION BY MAILING AGENTS ONLY
59. FOR COMPLETION BY MAILING AGENTS ONLY
60. FOR COMPLETION BY MAILING AGENTS ONLY
61. FOR COMPLETION BY MAILING AGENTS ONLY
62. FOR COMPLETION BY MAILING AGENTS ONLY
63. FOR COMPLETION BY MAILING AGENTS ONLY
64. FOR COMPLETION BY MAILING AGENTS ONLY
65. FOR COMPLETION BY MAILING AGENTS ONLY
66. FOR COMPLETION BY MAILING AGENTS ONLY
67. FOR COMPLETION BY MAILING AGENTS ONLY
68. FOR COMPLETION BY MAILING AGENTS ONLY
69. FOR COMPLETION BY MAILING AGENTS ONLY
70. FOR COMPLETION BY MAILING AGENTS ONLY
71. FOR COMPLETION BY MAILING AGENTS ONLY
72. FOR COMPLETION BY MAILING AGENTS ONLY
73. FOR COMPLETION BY MAILING AGENTS ONLY
74. FOR COMPLETION BY MAILING AGENTS ONLY
75. FOR COMPLETION BY MAILING AGENTS ONLY
76. FOR COMPLETION BY MAILING AGENTS ONLY
77. FOR COMPLETION BY MAILING AGENTS ONLY
78. FOR COMPLETION BY MAILING AGENTS ONLY
79. FOR COMPLETION BY MAILING AGENTS ONLY
80. FOR COMPLETION BY MAILING AGENTS ONLY
81. FOR COMPLETION BY MAILING AGENTS ONLY
82. FOR COMPLETION BY MAILING AGENTS ONLY
83. FOR COMPLETION BY MAILING AGENTS ONLY
84. FOR COMPLETION BY MAILING AGENTS ONLY
85. FOR COMPLETION BY MAILING AGENTS ONLY
86. FOR COMPLETION BY MAILING AGENTS ONLY
87. FOR COMPLETION BY MAILING AGENTS ONLY
88. FOR COMPLETION BY MAILING AGENTS ONLY
89. FOR COMPLETION BY MAILING AGENTS ONLY
90. FOR COMPLETION BY MAILING AGENTS ONLY
91. FOR COMPLETION BY MAILING AGENTS ONLY
92. FOR COMPLETION BY MAILING AGENTS ONLY
93. FOR COMPLETION BY MAILING AGENTS ONLY
94. FOR COMPLETION BY MAILING AGENTS ONLY
95. FOR COMPLETION BY MAILING AGENTS ONLY
96. FOR COMPLETION BY MAILING AGENTS ONLY
97. FOR COMPLETION BY MAILING AGENTS ONLY
98. FOR COMPLETION BY MAILING AGENTS ONLY
99. FOR COMPLETION BY MAILING AGENTS ONLY
100. FOR COMPLETION BY MAILING AGENTS ONLY
101. FOR COMPLETION BY MAILING AGENTS ONLY
102. FOR COMPLETION BY MAILING AGENTS ONLY
103. FOR COMPLETION BY MAILING AGENTS ONLY
104. FOR COMPLETION BY MAILING AGENTS ONLY
105. FOR COMPLETION BY MAILING AGENTS ONLY
106. FOR COMPLETION BY MAILING AGENTS ONLY
107. FOR COMPLETION BY MAILING AGENTS ONLY
108. FOR COMPLETION BY MAILING AGENTS ONLY
109. FOR COMPLETION BY MAILING AGENTS ONLY
110. FOR COMPLETION BY MAILING AGENTS ONLY
111. FOR COMPLETION BY MAILING AGENTS ONLY
112. FOR COMPLETION BY MAILING AGENTS ONLY
113. FOR COMPLETION BY MAILING AGENTS ONLY
114. FOR COMPLETION BY MAILING AGENTS ONLY
115. FOR COMPLETION BY MAILING AGENTS ONLY
116. FOR COMPLETION BY MAILING AGENTS ONLY
117. FOR COMPLETION BY MAILING AGENTS ONLY
118. FOR COMPLETION BY MAILING AGENTS ONLY
119. FOR COMPLETION BY MAILING AGENTS ONLY
120. FOR COMPLETION BY MAILING AGENTS ONLY
121. FOR COMPLETION BY MAILING AGENTS ONLY
122. FOR COMPLETION BY MAILING AGENTS ONLY
123. FOR COMPLETION BY MAILING AGENTS ONLY
124. FOR COMPLETION BY MAILING AGENTS ONLY
125. FOR COMPLETION BY MAILING AGENTS ONLY
126. FOR COMPLETION BY MAILING AGENTS ONLY
127. FOR COMPLETION BY MAILING AGENTS ONLY
128. FOR COMPLETION BY MAILING AGENTS ONLY
129. FOR COMPLETION BY MAILING AGENTS ONLY
130. FOR COMPLETION BY MAILING AGENTS ONLY
131. FOR COMPLETION BY MAILING AGENTS ONLY
132. FOR COMPLETION BY MAILING AGENTS ONLY
133. FOR COMPLETION BY MAILING AGENTS ONLY
134. FOR COMPLETION BY MAILING AGENTS ONLY
135. FOR COMPLETION BY MAILING AGENTS ONLY
136. FOR COMPLETION BY MAILING AGENTS ONLY
137. FOR COMPLETION BY MAILING AGENTS ONLY
138. FOR COMPLETION BY MAILING AGENTS ONLY
139. FOR COMPLETION BY MAILING AGENTS ONLY
140. FOR COMPLETION BY MAILING AGENTS ONLY
141. FOR COMPLETION BY MAILING AGENTS ONLY
142. FOR COMPLETION BY MAILING AGENTS ONLY
143. FOR COMPLETION BY MAILING AGENTS ONLY
144. FOR COMPLETION BY MAILING AGENTS ONLY
145. FOR COMPLETION BY MAILING AGENTS ONLY
146. FOR COMPLETION BY MAILING AGENTS ONLY
147. FOR COMPLETION BY MAILING AGENTS ONLY
148. FOR COMPLETION BY MAILING AGENTS ONLY
149. FOR COMPLETION BY MAILING AGENTS ONLY
150. FOR COMPLETION BY MAILING AGENTS ONLY
151. FOR COMPLETION BY MAILING AGENTS ONLY
152. FOR COMPLETION BY MAILING AGENTS ONLY
153. FOR COMPLETION BY MAILING AGENTS ONLY
154. FOR COMPLETION BY MAILING AGENTS ONLY
155. FOR COMPLETION BY MAILING AGENTS ONLY
156. FOR COMPLETION BY MAILING AGENTS ONLY
157. FOR COMPLETION BY MAILING AGENTS ONLY
158. FOR COMPLETION BY MAILING AGENTS ONLY
159. FOR COMPLETION BY MAILING AGENTS ONLY
160. FOR COMPLETION BY MAILING AGENTS ONLY
161. FOR COMPLETION BY MAILING AGENTS ONLY
162. FOR COMPLETION BY MAILING AGENTS ONLY
163. FOR COMPLETION BY MAILING AGENTS ONLY
164. FOR COMPLETION BY MAILING AGENTS ONLY
165. FOR COMPLETION BY MAILING AGENTS ONLY
166. FOR COMPLETION BY MAILING AGENTS ONLY
167. FOR COMPLETION BY MAILING AGENTS ONLY
168. FOR COMPLETION BY MAILING AGENTS ONLY
169. FOR COMPLETION BY MAILING AGENTS ONLY
170. FOR COMPLETION BY MAILING AGENTS ONLY
171. FOR COMPLETION BY MAILING AGENTS ONLY
172. FOR COMPLETION BY MAILING AGENTS ONLY
173. FOR COMPLETION BY MAILING AGENTS ONLY
174. FOR COMPLETION BY MAILING AGENTS ONLY
175. FOR COMPLETION BY MAILING AGENTS ONLY
176. FOR COMPLETION BY MAILING AGENTS ONLY
177. FOR COMPLETION BY MAILING AGENTS ONLY
178. FOR COMPLETION BY MAILING AGENTS ONLY
179. FOR COMPLETION BY MAILING AGENTS ONLY
180. FOR COMPLETION BY MAILING AGENTS ONLY
181. FOR COMPLETION BY MAILING AGENTS ONLY
182. FOR COMPLETION BY MAILING AGENTS ONLY
183. FOR COMPLETION BY MAILING AGENTS ONLY
184. FOR COMPLETION BY MAILING AGENTS ONLY
185. FOR COMPLETION BY MAILING AGENTS ONLY
186. FOR COMPLETION BY MAILING AGENTS ONLY
187. FOR COMPLETION BY MAILING AGENTS ONLY
188. FOR COMPLETION BY MAILING AGENTS ONLY
189. FOR COMPLETION BY MAILING AGENTS ONLY
190. FOR COMPLETION BY MAILING AGENTS ONLY
191. FOR COMPLETION BY MAILING AGENTS ONLY
192. FOR COMPLETION BY MAILING AGENTS ONLY
193. FOR COMPLETION BY MAILING AGENTS ONLY
194. FOR COMPLETION BY MAILING AGENTS ONLY
195. FOR COMPLETION BY MAILING AGENTS ONLY
196. FOR COMPLETION BY MAILING AGENTS ONLY
197. FOR COMPLETION BY MAILING AGENTS ONLY
198. FOR COMPLETION BY MAILING AGENTS ONLY
199. FOR COMPLETION BY MAILING AGENTS ONLY
200. FOR COMPLETION BY MAILING AGENTS ONLY
201. FOR COMPLETION BY MAILING AGENTS ONLY
202. FOR COMPLETION BY MAILING AGENTS ONLY
203. FOR COMPLETION BY MAILING AGENTS ONLY
204. FOR COMPLETION BY MAILING AGENTS ONLY
205. FOR COMPLETION BY MAILING AGENTS ONLY
206. FOR COMPLETION BY MAILING AGENTS ONLY
207. FOR COMPLETION BY MAILING AGENTS ONLY
208. FOR COMPLETION BY MAILING AGENTS ONLY
209. FOR COMPLETION BY MAILING AGENTS ONLY
210. FOR COMPLETION BY MAILING AGENTS ONLY
211. FOR COMPLETION BY MAILING AGENTS ONLY
212. FOR COMPLETION BY MAILING AGENTS ONLY
213. FOR COMPLETION BY MAILING AGENTS ONLY
214. FOR COMPLETION BY MAILING AGENTS ONLY
215. FOR COMPLETION BY MAILING AGENTS ONLY
216. FOR COMPLETION BY MAILING AGENTS ONLY
217. FOR COMPLETION BY MAILING AGENTS ONLY
218. FOR COMPLETION BY MAILING AGENTS ONLY
219. FOR COMPLETION BY MAILING AGENTS ONLY
220. FOR COMPLETION BY MAILING AGENTS ONLY
221. FOR COMPLETION BY MAILING AGENTS ONLY
222. FOR COMPLETION BY MAILING AGENTS ONLY
223. FOR COMPLETION BY MAILING AGENTS ONLY
224. FOR COMPLETION BY MAILING AGENTS ONLY
225. FOR COMPLETION BY MAILING AGENTS ONLY
226. FOR COMPLETION BY MAILING AGENTS ONLY
227. FOR COMPLETION BY MAILING AGENTS ONLY
228. FOR COMPLETION BY MAILING AGENTS ONLY
229. FOR COMPLETION BY MAILING AGENTS ONLY
230. FOR COMPLETION BY MAILING AGENTS ONLY
231. FOR COMPLETION BY MAILING AGENTS ONLY
232. FOR COMPLETION BY MAILING AGENTS ONLY
233. FOR COMPLETION BY MAILING AGENTS ONLY
234. FOR COMPLETION BY MAILING AGENTS ONLY
235. FOR COMPLETION BY MAILING AGENTS ONLY
236. FOR COMPLETION BY MAILING AGENTS ONLY
237. FOR COMPLETION BY MAILING AGENTS ONLY
238. FOR COMPLETION BY MAILING AGENTS ONLY
239. FOR COMPLETION BY MAILING AGENTS ONLY
240. FOR COMPLETION BY MAILING AGENTS ONLY
241. FOR COMPLETION BY MAILING AGENTS ONLY
242. FOR COMPLETION BY MAILING AGENTS ONLY
243. FOR COMPLETION BY MAILING AGENTS ONLY
244. FOR COMPLETION BY MAILING AGENTS ONLY
245. FOR COMPLETION BY MAILING AGENTS ONLY
246. FOR COMPLETION BY MAILING AGENTS ONLY
247. FOR COMPLETION BY MAILING AGENTS ONLY
248. FOR COMPLETION BY MAILING AGENTS ONLY
249. FOR COMPLETION BY MAILING AGENTS ONLY
250. FOR COMPLETION BY MAILING AGENTS ONLY
251. FOR COMPLETION BY MAILING AGENTS ONLY
252. FOR COMPLETION BY MAILING AGENTS ONLY
253. FOR COMPLETION BY MAILING AGENTS ONLY
254. FOR COMPLETION BY MAILING AGENTS ONLY
255. FOR COMPLETION BY MAILING AGENTS ONLY
256. FOR COMPLETION BY MAILING AGENTS ONLY
257. FOR COMPLETION BY MAILING AGENTS ONLY
258. FOR COMPLETION BY MAILING AGENTS ONLY
259. FOR COMPLETION BY MAILING AGENTS ONLY
260. FOR COMPLETION BY MAILING AGENTS ONLY
261. FOR COMPLETION BY MAILING AGENTS ONLY
262. FOR COMPLETION BY MAILING AGENTS ONLY
263. FOR COMPLETION BY MAILING AGENTS ONLY
264. FOR COMPLETION BY MAILING AGENTS ONLY
265. FOR COMPLETION BY MAILING AGENTS ONLY
266. FOR COMPLETION BY MAILING AGENTS ONLY
267. FOR COMPLETION BY MAILING AGENTS ONLY
268. FOR COMPLETION BY MAILING AGENTS ONLY
269. FOR COMPLETION BY MAILING AGENTS ONLY
270. FOR COMPLETION BY MAILING AGENTS ONLY
271. FOR COMPLETION BY MAILING AGENTS ONLY
272. FOR COMPLETION BY MAILING AGENTS ONLY
273. FOR COMPLETION BY MAILING AGENTS ONLY
274. FOR COMPLETION BY MAILING AGENTS ONLY
275. FOR COMPLETION BY MAILING AGENTS ONLY
276. FOR COMPLETION BY MAILING AGENTS ONLY
277. FOR COMPLETION BY MAILING AGENTS ONLY
278. FOR COMPLETION BY MAILING AGENTS ONLY
279. FOR COMPLETION BY MAILING AGENTS ONLY
280. FOR COMPLETION BY MAILING AGENTS ONLY
281. FOR COMPLETION BY MAILING AGENTS ONLY
282. FOR COMPLETION BY MAILING AGENTS ONLY
283. FOR COMPLETION BY MAILING AGENTS ONLY
284. FOR COMPLETION BY MAILING AGENTS ONLY
285. FOR COMPLETION BY MAILING AGENTS ONLY
286. FOR COMPLETION BY MAILING AGENTS ONLY
287. FOR COMPLETION BY MAILING AGENTS ONLY
288. FOR COMPLETION BY MAILING AGENTS ONLY
289. FOR COMPLETION BY MAILING AGENTS ONLY
290. FOR COMPLETION BY MAILING AGENTS ONLY
291. FOR COMPLETION BY MAILING AGENTS ONLY
292. FOR COMPLETION BY MAILING AGENTS ONLY
293. FOR COMPLETION BY MAILING AGENTS ONLY
294. FOR COMPLETION BY MAILING AGENTS ONLY
295. FOR COMPLETION BY MAILING AGENTS ONLY
296. FOR COMPLETION BY MAILING AGENTS ONLY
297. FOR COMPLETION BY MAILING AGENTS ONLY
298. FOR COMPLETION BY MAILING AGENTS ONLY
299. FOR COMPLETION BY MAILING AGENTS ONLY
300. FOR COMPLETION BY MAILING AGENTS ONLY
301. FOR COMPLETION BY MAILING AGENTS ONLY
302. FOR COMPLETION BY MAILING AGENTS ONLY
303. FOR COMPLETION BY MAILING AGENTS ONLY
304. FOR COMPLETION BY MAILING AGENTS ONLY
305. FOR COMPLETION BY MAILING AGENTS ONLY
306. FOR COMPLETION BY MAILING AGENTS ONLY
307. FOR COMPLETION BY MAILING AGENTS ONLY
308. FOR COMPLETION BY MAILING AGENTS ONLY
309. FOR COMPLETION BY MAILING AGENTS ONLY
310. FOR COMPLETION BY MAILING AGENTS ONLY
311. FOR COMPLETION BY MAILING AGENTS ONLY
312. FOR COMPLETION BY MAILING AGENTS ONLY
313. FOR COMPLETION BY MAILING AGENTS ONLY
314. FOR COMPLETION BY MAILING AGENTS ONLY
315. FOR COMPLETION BY MAILING AGENTS ONLY
316. FOR COMPLETION BY MAILING AGENTS ONLY
317. FOR COMPLETION BY MAILING AGENTS ONLY
318. FOR COMPLETION BY MAILING AGENTS ONLY
319. FOR COMPLETION BY MAILING AGENTS ONLY
320. FOR COMPLETION BY MAILING AGENTS ONLY
321. FOR COMPLETION BY MAILING AGENTS ONLY
322. FOR COMPLETION BY MAILING AGENTS ONLY
323. FOR COMPLETION BY MAILING AGENTS ONLY
324. FOR COMPLETION BY MAILING AGENTS ONLY
325. FOR COMPLETION BY MAILING AGENTS ONLY
326. FOR COMPLETION BY MAILING AGENTS ONLY
327. FOR COMPLETION BY MAILING AGENTS ONLY
328. FOR COMPLETION BY MAILING AGENTS ONLY
329. FOR COMPLETION BY MAILING AGENTS ONLY
330. FOR COMPLETION BY MAILING AGENTS ONLY
331. FOR COMPLETION BY MAILING AGENTS ONLY
332. FOR COMPLETION BY MAILING AGENTS ONLY
333. FOR COMPLETION BY MAILING AGENTS ONLY
334. FOR COMPLETION BY MAILING AGENTS ONLY
335. FOR COMPLETION BY MAILING AGENTS ONLY
336. FOR COMPLETION BY MAILING AGENTS ONLY
337. FOR COMPLETION BY MAILING AGENTS ONLY
338. FOR COMPLETION BY MAILING AGENTS ONLY
339. FOR COMPLETION BY MAILING AGENTS ONLY
340. FOR COMPLETION BY MAILING AGENTS ONLY
341. FOR COMPLETION BY MAILING AGENTS ONLY
342. FOR COMPLETION BY MAILING AGENTS ONLY
343. FOR COMPLETION BY MAILING AGENTS ONLY
344. FOR COMPLETION BY MAILING AGENTS ONLY
345. FOR COMPLETION BY MAILING AGENTS ONLY
346. FOR COMPLETION BY MAILING AGENTS ONLY
347. FOR COMPLETION BY MAILING AGENTS ONLY
348. FOR COMPLETION BY MAILING AGENTS ONLY
349. FOR COMPLETION BY MAILING AGENTS ONLY
350. FOR COMPLETION BY MAILING AGENTS ONLY
351. FOR COMPLETION BY MAILING AGENTS ONLY
352. FOR COMPLETION BY MAILING AGENTS ONLY
353. FOR COMPLETION BY MAILING AGENTS ONLY
354. FOR COMPLETION BY MAILING AGENTS ONLY
355. FOR COMPLETION BY MAILING AGENTS ONLY
356. FOR COMPLETION BY MAILING AGENTS ONLY
357. FOR COMPLETION BY MAILING AGENTS ONLY
358. FOR COMPLETION BY MAILING AGENTS ONLY
359. FOR COMPLETION BY MAILING AGENTS ONLY
360. FOR COMPLETION BY MAILING AGENTS ONLY
361. FOR COMPLETION BY MAILING AGENTS ONLY
362. FOR COMPLETION BY MAILING AGENTS ONLY
363. FOR COMPLETION BY MAILING AGENTS ONLY
364. FOR COMPLETION BY MAILING AGENTS ONLY
365. FOR COMPLETION BY MAILING AGENTS ONLY
366. FOR COMPLETION BY MAILING AGENTS ONLY
367. FOR COMPLETION BY MAILING AGENTS ONLY
368. FOR COMPLETION BY MAILING AGENTS ONLY
369. FOR COMPLETION BY MAILING AGENTS ONLY
370. FOR COMPLETION BY MAILING AGENTS ONLY
371. FOR COMPLETION BY MAILING AGENTS ONLY
372. FOR COMPLETION BY MAILING AGENTS ONLY
373. FOR COMPLETION BY MAILING AGENTS ONLY
374. FOR COMPLETION BY MAILING AGENTS ONLY
375. FOR COMPLETION BY MAILING AGENTS ONLY
376. FOR COMPLETION BY MAILING AGENTS ONLY
377. FOR COMPLETION BY MAILING AGENTS ONLY
378. FOR COMPLETION BY MAILING AGENTS ONLY
379. FOR COMPLETION BY MAILING AGENTS ONLY
380. FOR COMPLETION BY MAILING AGENTS ONLY
381. FOR COMPLETION BY MAILING AGENTS ONLY
382. FOR COMPLETION BY MAILING AGENTS ONLY
383. FOR COMPLETION BY MAILING AGENTS ONLY
384. FOR COMPLETION BY MAILING AGENTS ONLY
385. FOR COMPLETION BY MAILING AGENTS ONLY
386. FOR COMPLETION BY MAILING AGENTS ONLY
387. FOR COMPLETION BY MAILING AGENTS ONLY
388. FOR COMPLETION BY MAILING AGENTS ONLY
389. FOR COMPLETION BY MAILING AGENTS ONLY
390. FOR COMPLETION BY MAILING AGENTS ONLY
391. FOR COMPLETION BY MAILING AGENTS ONLY
392. FOR COMPLETION BY MAILING AGENTS ONLY
393. FOR COMPLETION BY MAILING AGENTS ONLY
394. FOR COMPLETION BY MAILING AGENTS ONLY
395. FOR COMPLETION BY MAILING AGENTS ONLY
396. FOR COMPLETION BY MAILING AGENTS ONLY
397. FOR COMPLETION BY MAILING AGENTS ONLY
398. FOR COMPLETION BY MAILING AGENTS ONLY
399. FOR COMPLETION BY MAILING AGENTS ONLY
400. FOR COMPLETION BY MAILING AGENTS ONLY
401. FOR COMPLETION BY MAILING AGENTS ONLY
402. FOR COMPLETION BY MAILING AGENTS ONLY
403. FOR COMPLETION BY MAILING AGENTS ONLY
404. FOR COMPLETION BY MAILING AGENTS ONLY
405. FOR COMPLETION BY MAILING AGENTS ONLY
406. FOR COMPLETION BY MAILING AGENTS ONLY
407. FOR COMPLETION BY MAILING AGENTS ONLY
408. FOR COMPLETION BY MAILING AGENTS ONLY
409. FOR COMPLETION BY MAILING AGENTS ONLY
410. FOR COMPLETION BY MAILING AGENTS ONLY
411. FOR COMPLETION BY MAILING AGENTS ONLY
412. FOR COMPLETION BY MAILING AGENTS ONLY
413. FOR COMPLETION BY MAILING AGENTS ONLY
414. FOR COMPLETION BY MAILING AGENTS ONLY
415. FOR COMPLETION BY MAILING AGENTS ONLY
416. FOR COMPLETION BY MAILING AGENTS ONLY
417. FOR COMPLETION BY MAILING AGENTS ONLY
418. FOR COMPLETION BY MAILING AGENTS ONLY
419. FOR COMPLETION BY MAILING AGENTS ONLY
420. FOR COMPLETION BY MAILING AGENTS ONLY
421. FOR COMPLETION BY MAILING AGENTS ONLY
422. FOR COMPLETION BY MAILING AGENTS ONLY
423. FOR COMPLETION BY MAILING AGENTS ONLY
424. FOR COMPLETION BY MAILING AGENTS ONLY
425. FOR COMPLETION BY MAILING AGENTS ONLY
426. FOR COMPLETION BY MAILING AGENTS ONLY
427. FOR COMPLETION BY MAILING AGENTS ONLY
428. FOR COMPLETION BY MAILING AGENTS ONLY
429. FOR COMPLETION BY MAILING AGENTS ONLY
430. FOR COMPLETION BY MAILING AGENTS ONLY
431. FOR COMPLETION BY MAILING AGENTS ONLY
432. FOR COMPLETION BY MAILING AGENTS ONLY
433. FOR COMPLETION BY MAILING AGENTS ONLY
434. FOR COMPLETION BY MAILING AGENTS ONLY
435. FOR COMPLETION BY MAILING AGENTS ONLY
436. FOR COMPLETION BY MAILING AGENTS ONLY
437. FOR COMPLETION BY MAILING AGENTS ONLY
438. FOR COMPLETION BY MAILING AGENTS ONLY
439. FOR COMPLETION BY MAILING AGENTS ONLY
440. FOR COMPLETION BY MAILING AGENTS ONLY
441. FOR COMPLETION BY MAILING AGENTS ONLY
442. FOR COMPLETION BY MAILING AGENTS ONLY
443. FOR COMPLETION BY MAILING AGENTS ONLY
444. FOR COMPLETION BY MAILING AGENTS ONLY
445. FOR COMPLETION BY MAILING AGENTS ONLY
446. FOR COMPLETION BY MAILING AGENTS ONLY
447. FOR COMPLETION BY MAILING AGENTS ONLY
448. FOR COMPLETION BY MAILING AGENTS ONLY
449. FOR COMPLETION BY MAILING AGENTS ONLY
450. FOR COMPLETION BY MAILING AGENTS ONLY
451. FOR COMPLETION BY MAILING AGENTS ONLY
452. FOR COMPLETION BY MAILING AGENTS ONLY
453. FOR COMPLETION BY MAILING AGENTS ONLY
454. FOR COMPLETION BY MAILING AGENTS ONLY
455. FOR COMPLETION BY MAILING AGENTS ONLY
456. FOR COMPLETION BY MAILING AGENTS ONLY
457. FOR COMPLETION BY MAILING AGENTS ONLY
458. FOR COMPLETION BY MAILING AGENTS ONLY
459. FOR COMPLETION BY MAILING AGENTS ONLY
460. FOR COMPLETION BY MAILING AGENTS ONLY
461. FOR COMPLETION BY MAILING AGENTS ONLY
462. FOR COMPLETION BY MAILING AGENTS ONLY
4

Twenty-Fifth Century™

Software Division

INTRODUCTORY OFFER

For your
Atari 800/800XL/65XE/130XE

We're dedicated to bringing you truly practical software at DOWN TO PLANET EARTH PRICES. Our newest 8-bit products are the creation of JEFF BRENNER, columnist for Computer Shopper, of "Applying the Atari" fame, and author of magazine and book articles in ANALOG, COMPUTE! and others. All of our programs are superbly engineered for ease-of-use and come handsomely packaged with complete documentation.

Write for our FREE CATALOG — or better yet, take advantage of the following HOLIDAY SPECIALS, ready for IMMEDIATE SHIPMENT.

• **RESPONSE ANALYSIS PROGRAM (RAP)** will astound and amuse you with its remarkable ARTIFICIAL INTELLIGENCE. Terrific party game.

Excerpt from actual conversation:

ME: Do you mind if I print what you are saying?

RAP: Do you think I know what I am saying?

ME: That's true — you're a computer program

RAP: Have you ever wanted to be a computer program?

RAP features FAST RESPONSE TIME and is USER EXPANDABLE so you can CREATE YOUR OWN PERSONALITIES! Only \$12.95.

• **EASY STUDY PROGRAM (ESP)** gives you that unfair advantage for almost any type of exam. PROVEN MEMORY-TRAINING TECHNIQUE maximizes studying efficiency so you'll retain more in less time. Supports disk functions, editing, score graphing, and 130XE RAMDISK. Only \$14.95.

• **INSTANT ALPHABETIZER** gets those names, book titles, record albums, video cassettes in order with SUPER MACHINE-LANGUAGE SPEED. Save lists to disk, edit, add, and print! Also supports automatic multi-disk directory alphabetization and ramdisk. Only \$12.95.

• **BUDGETMATE** keeps track of your finances down to EVERY LAST TRANSACTION DETAIL! 20 user defined categories each holding 20 details for EACH MONTH! Not only helps you keep a balanced budget, but end-of-year income/expense summary is INDISPENSABLE WHEN TAX TIME ARRIVES. Supports Atari CX-85 keypad, too! Only \$14.95.

• **MAILING LIST** stores names, addresses, allows user categorizing, searches, and can PRINT BY CATEGORY! Double-column label printing, ID code, and full disk functions supported. Only \$12.95.

• **FORMS GENERATOR** shows you the exact form you're designing on its SCROLLING-SPREADSHEET SCREEN! Use graphics (with dot-matrix printers) to create professional looking invoices, purchase orders, statements, etc. No tedious "cells" or restricted positioning. LARGE CALCULATION-DEFINITION CAPABILITY. Supports keypad and ramdisk. Only \$12.95.

Send check or money order to:

Twenty-Fifth Century™

Software Division, Dept AT1

P.O. Box 8042

Long Island, New York 11802

Please add \$1.95 shipping & handling.

New York residents add sales tax.

All programs require a disk drive and a minimum of 48K RAM.

DEALER INQUIRIES WELCOME.

8-bit and ST submissions are now being evaluated — Write for our author's guide.

Atari is a registered trademark of Atari Corp.



SEND FOR DETAILS

DISK-OF-THE-MONTH CLUB* P.O. BOX 116, FAIR LAWN, N.J. 07410-0116

NAME _____
STREET ADDRESS _____
CITY _____ STATE _____ ZIP _____
*Disk of UNLIMITED SOFTWARE INC

CIRCLE 095 ON READER SERVICE CARD

THE SEARCH FOR NEW, QUALITY
ATARI 8-BIT SOFTWARE IS OVER!
HERE THEY ARE

THE BUSINESS MANAGER 3.0.....\$49.95
A complete program to run YOUR small
business! Tracks customers, products,
sales, and tax. Prints invoices,
statements, and mailing labels.

NEWS STATION.....\$29.95
Write and print your own newspaper on
an Atari computer. Easily combines text
and pictures on each page. Fantastic for
schools, clubs, or your own enjoyment.
EPSON/GEMINI/SG-10/PANASONIC printer.

THE SUPER REEVEKEY.....\$19.95
Cure your CX85 numeric keypad and bring
it to life. This software allows you to
use your keypad with most popular
software. If you have a CX85 keypad then
you need this! (XL/XE ONLY!)

THE BACKUP MASTER.....\$29.95
The ultimate disk copy program. Copies
virtually any disk using software only!
Works with any drive. Just as powerful
as hardware modifications! (XL/XE ONLY!)

ALL PRODUCTS LISTED ARE AVAILABLE FOR
IMMEDIATE DELIVERY! TO ORDER SEND A
CHECK, MONEY ORDER OR CALL FOR A COD.

REEVE Software
29W150 Old Farm Lane
ATARI Warrenville, IL 60555
(312) 393-2317

CIRCLE 094 ON READER SERVICE CARD

The Atari ST's first full-function MIDI multi-track recording studio.

- Fast real-time record, playback, overdub
- 16 independent tracks
- 30,000+ notes per song
- Designed for ease-of-use
No commands to memorize
Mouse, menu, graphics-oriented
Tape recorder-style controls
- Flexible region editing
- Step record for note-by-note entry
- Real-time tempo change and track mixing

Hardware required: Atari ST and MIDI instrument(s)

METATRAK only \$99
(demo disk-\$10)
30-day money back guarantee

MIDISOFT CORP.
P.O. Box 17518, Seattle, WA 98107
(206) 827-0750

CIRCLE 087 ON READER SERVICE CARD

CIRCLE 091 ON READER SERVICE CARD

MOVING?

Don't Forget Us!

I am also a Start subscriber.

New Address:

Name _____

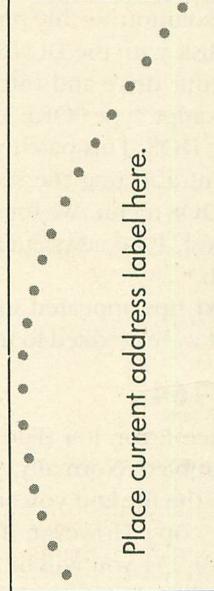
Address _____

City _____

State _____

Zip _____

Place current address label here.



Fill in
coupon
and mail
to:
• Antic
• P.O. Box 1919
• Marion OH
• 43306



BY BILL MARQUARDT, ANTIC TECHNICAL ASSISTANT

This month's Tech Tips will explain some handy ways to modify Atari DOS 2.0 for special purposes. DOS 2 is older than DOS 2.5 and the not-recommended DOS 3, but it is still the most commonly used official Atari Disk Operating System. And it serves as the standard for DOS compatibility. DOS 2 is the operating system you will find on each month's Antic Disk.

First, a few words of CAUTION: The following enhancements were designed specifically for Atari DOS 2. We don't know exactly what would happen if you try these changes any other DOS, but we doubt if the results would be anything good. And be sure to keep a backup copy of original DOS 2, in case you later change your mind about using any of these modifications.

DUPLICATE FILENAMES

One problem with DOS 2 is that it is possible to rename a file to an existing filename. If you attempt to delete or rename one of them, they will both be deleted or renamed. Here is a solution to this problem.

Take a disk with the DOS.SYS and DUP.SYS files on it. Put it in your drive and turn on your computer. At the READY prompt, type POKE 3117,234 and POKE 3118,234. Then type DOS. This patch will let you rename the first file without affecting the second when using option E from the DOS menu. We found this tip from Jerry White in the August, 1986 newsletter of the Lawrence Atari Computer Club.

The next tips appeared in various users group newsletters and were credited to the sysop of the Atlantis BBS.

ERROR 164

You will see Error 164 (File Number Mismatch) if your file is scrambled. Normally, your computer won't allow you to see the file and you are hopelessly lost if this was your only copy. However, if you do a POKE 4148,234: POKE 4149,234 you will be able to LOAD your file, garbage and all, and correct it! Be sure to SAVE the corrected file to another disk and avoid using the damaged version.

OVER TWO DRIVES

You must tell DOS that you have more than two drives attached to your system if you want to access them. Location 1802 is the flag for this purpose. Each bit in the byte stored there represents a drive. Setting a bit will allow DOS to access the corresponding drive.

Normally, the lowest two bits are set, so you would find a 3 in location 1802. By POKEing in a 7 you set DOS for three drives, and by POKEing in 15, you set DOS for four drives. This is because the bit patterns are 0111 and 1111 respectively. This is a change that should be made permanent by re-writing DOS to disk after the POKE. You can access as many as eight drives. But keep in mind that

every drive you add requires 128 bytes of memory to store its buffer.

OPEN FILE LIMITS

DOS limits you to three simultaneously open files. But if you find this restrictive, you can expand the limit to seven by simply doing a POKE 1801,7. A buffer of 128 bytes is used for each file. Use a number less than seven if you don't want to give up all that valuable RAM.

LOWERCASE FILENAMES

If you are bored with all uppercase filenames try this: POKE 3818,48:POKE 3822,123. Now you can use any ATASCII character from CHR(48) to CHR(122) ("0" to "z"). Note that the second POKE value is the ATASCII value plus one. It is *not* recommended to go above or below these values.

CHANGING WILDCARDS

This tip is of dubious value, but if you would like your wildcard character to be something other than the asterisk [*], POKE 3783 with the ATASCII value of your chosen character.

PERMANENT POKEs

Remember that all the above POKEs are made from BASIC in the immediate mode. You do *not* need line numbers. The changes can then be made permanent by typing DOS to go to the DOS menu and using option H to rewrite your modified version of DOS to disk.

DIRECTORY TEXT

Would you like to create a text file on your disk that contains the directory? This short routine by Sally Nagy appeared in the newsletter of the Capitol Hill Atari Owners Society (CHAOS):

```
10 DIM A$(20),B$(1280)
20 OPEN #1,6,0,"D:.*.*":TRAP 80
40 INPUT #1;A$:B$(LEN(B$)+1)=A$
60 GOTO 40
80 CLOSE #1:OPEN #1,8,0,"D:DISKDIR"
90 B$(LEN(B$)+1) = " " :B$(LEN(B$)+1)=A$
110 M = 17:FOR N = 1 TO LEN(B$)/M
130 PRINT #1,B$((N-1)*M+1,N*M)
140 NEXT N:CLOSE #1
```

If you have a Tech Tip that you would like to share with other readers, send it along to Antic Tech Tips, 524 Second Street, San Francisco, CA 94107. You might get your name in print. We always welcome very short programs that demonstrate the Atari's powers, simple hardware modifications, or useful macros for popular software.

Tokyo for \$19.95

In the continuing evolution of scenery, SubLOGIC introduces the Japan and San Francisco Bay Area Scenery Disks for Flight Simulator II.

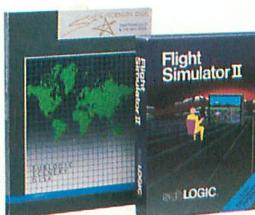
- Tokyo to Osaka is a comfortable 240-mile flight. The natural beauty of the Japanese coastline and mountain ranges complement the standard cross-country details.
- The beautiful San Francisco Bay Area "Star" Scenery Disk is perfect for concentrated sight-seeing.
- For the cross-country adventurer, our standard Western U.S. scenery (Disks 1-6) contains major airports, nav-aids, cities, highways, rivers, lakes, and mountains.

SubLOGIC Scenery Disks are available individually for \$19.95. The six-disk Western U.S. set is available for \$99.95. See your dealer, or write or call SubLOGIC for more information.

subLOGIC
Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995

Order Line: (800) 637-4983
(except in Illinois, Alaska, and Hawaii)

CIRCLE 065 ON READER SERVICE CARD



東京



From Origin, source of the classic,
award-winning Ultima™ series, comes

AUTODUEL

A futuristic, fast-paced strategy role-playing game by Lord British and Chuckles. Based on the award-winning Car Wars® board game by Steve Jackson.

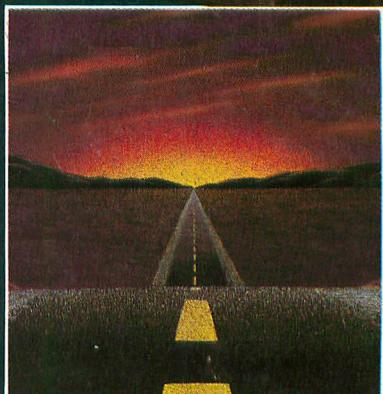
Available on Apple®

Drive the freeways of the future where the right of way goes to the biggest gun. Somewhere within the 16 cities and outlaw-infested highways are the clues you will need to complete the ultimate mission.

Step into the arena on Amateur Night and earn the right to custom-build your combat vehicles.

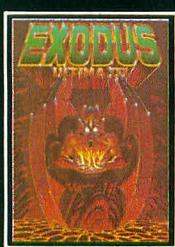
The AADA will offer you courier missions. The FBI and the underworld will vie for favors. But watch out! To survive you'll need road experience, the ability to decipher clues, gambling skills, money, a super car—even a clone.

The final gauntlet will test your tactical skills and hair trigger reactions to the limit. But with triumph comes honor, and entry into the elite circle of AutoDuellists. The challenge of AutoDuel® awaits you. Are you ready?

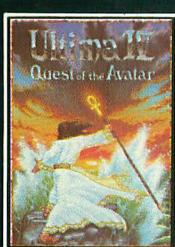


ORIGIN
SYSTEMS INC.

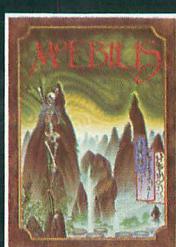
340 HARVEY ROAD, MANCHESTER, NH 03103 (603) 644-3360



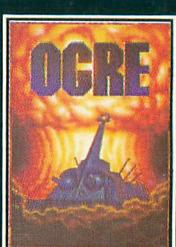
ULTIMA™ III sends you on an incredible fantasy role-playing journey through monster-plagued Sosaria in search of the elusive Exodus.



ULTIMA™ IV is the long-awaited sequel to Ultima™ III. The Quest of the Avatar is a quest to the final frontier—the self.



MOEBIUS™ takes you through the elemental planes of a colorful Oriental world of fantasy and adventure in search of the Orb of Celestial Harmony.



OGRE® is a strategy game fought on the nuclear battlefield of tomorrow as an inhuman juggernaut Cyber-tank battles conventional forces.

Ultima and Lord British are trademarks of Richard Garriott. Moebius is a trademark of Greg Malone. Ogre and AutoDuel are registered trademarks of Steve Jackson Games, Inc. Car Wars is a registered trademark of Texas Instruments. Apple is a trademark of Apple Computer Inc.

Authors wanted.
Call us today.